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MR. T. M. WILLIAMS, who for the past ten years has been Inspector of Mines at Wilkes-Barre, Pa., is at present in Arizona, where he is engaged in examining the property of the Oro Blanco and Harshaw Mining Company.

WE publish elsewhere an interesting report on the newly-found gold region of Brigus, Conception Bay, Newfoundland, by ALEXANDER MURRAY, C.M.G., F.G.S., Director of the Geological Survey of the Island, dated October 8th, 1880, addressed to his Excellency Sir JOHN H. GLOVER, Governor of Newfoundland. Mr. MURRAY states that licenses of search are being taken out at the Surveyor-General's office, and he gives it as his opinion that the indications are sufficiently favorable to warrant a fair trial, provided ample capital and skilled and judicious labor be applied. The resemblance in general character to the Nova Scotia gold regions is noted, and is said to be striking.

Should the district turn out to be sufficiently rich to induce capital to work it, we hope, for the sake of the islanders and those who are willing to risk their money as capitalists, that the follies so abundantly committed in Nova Scotia in the past will not be repeated here, and so bring into disrepute and put back for an indefinite period what may be a promising field for capital and enterprise.

THE BASE OF THE METRIC SYSTEM.

We publish with pleasure, in another column, a communication from President BARNARD, pointing out the error concerning the determination of a standard meter contained in a passing phrase of our recent article on the New York and Pennsylvania boundary. We alluded to the meter as an illustration of our argument; and accepting frankly Dr. BARNARD'S correction, we find our argument affected by it.

So far as the metric system is concerned, we are, as Dr. BARNARD knows, its hearty and constant advocates. We believe it to be, as a whole, the best system of weights and measures now in use or at all likely to come into use. We should like to see it introduced everywhere, and as rapidly as is practicable. But our belief in its convenience is based on its completeness, consistency, and decimal character as a whole, and not on the intrinsic merits of the meter as a unity or in the relation which the meter bears to a given meridian arc. We presume President BARNARD rests his advocacy of the metric system on the same basis as ourselves. At the same time, we owe him our thanks for vindicating the truth of history and the reputation of great *savants* against the unintentional injustice of our remarks. *

THE GLACIATION OF NORTH GERMANY.

An address delivered October 9th, 1880, before the Geographical Society (*Gesellschaft für Erdkunde*) of Berlin, by Prof. HERMANN CREDNER, and published in No. 8 of the *Proceedings* of that society for 1880, gives an interesting summary of a most important change of scientific opinion that has recently taken place. As the successor of NAUMANN in the chair of geology at the Leipzig University, and Director of the Royal Saxon Geological Survey, Professor CREDNER speaks with authority, both as to the literature and as to the actual evidence in the field, bearing upon his subject. We shall briefly outline his address.

The soil and surface-*débris* of Middle Germany is of domestic origin—the product of the disintegration of the solid rocks which underlie it, or exist at no greater distance than ordinary alluvial agencies can overcome, in the transportation of mechanical sediments. But the great lowlands of North Germany are formed chiefly of foreign materials—the so-called northern diluvium, which has come from Norway, Sweden, Finland, and the Baltic provinces. Its most characteristic ingredient is the boulder-loam or boulder-marl (*Geschiebelehm, Geschiebemergel*), which is not stratified. There are, however, distinctly stratified clays, gravels, and sands (also of Scandinavian materials); and on the strength of these, the German geologists concluded, following LYELL'S drift-theory, that icebergs had transported and dropped in the sea then covering this region the materials thus stratified. These icebergs were supposed to have been the broken-off ends of the great Scandinavian glacier, which extended radially from its center or centers in the high mountains, to the sea. The Swedish geologists opposed this view, for a long time without producing much effect. They (and particularly TORELL) asserted that the boulder-marl was in all respects similar to certain deposits in Sweden, which were unmistakably the product of inland ice; and that in all probability the northern glaciers had extended over the whole area of the German and Sarmatian diluvium.

Since 1877, new evidence has been discovered, and old observations have been recalled, repeated, collated, and at last properly rated in value. The result has been the victory of TORELL'S view. The proofs comprise, first, distinct glacial polishing, striation, and *roches moutonnées*, where the diluvium is underlain by solid rock; secondly (where the underlying stratum is of loose texture), traces of crowding, squeezing, and dragging, effected by the glacier passing over it; thirdly, glacial pot-holes; fourthly, in the boulder-loam or marl, the distinct characters of a moraine; fifthly, a radial distribution of the different kinds of moraine material, corresponding in direction with the striations of the bed-rock; sixthly, marks of glacial action upon the pebbles and boulders themselves. As Professor CREDNER says in conclusion:

"Other and stronger proofs of the former existence of a glacier, there are not in any case. If these are invalid or inadequate, then the great extension in earlier and later times of the glaciers of the Alps, and the effects of the glacial period, as universally admitted, in Sweden and Norway, are but a delusion."

The explanation of the *stratified* diluvium is acknowledged to be still difficult and doubtful. Professor CREDNER suggests that the most probable hypothesis of such a formation may be that which attributes it to the agency of the water produced by the melting glacier and flowing in torrents, or collecting in pools underneath, as well as in front of it. The alternate advance and retreat of the glacier-terminus might easily cause the formation of lakes, in which glacial sediments could be laid down. The question of several successive glacial periods, of oscillations in continental level, as modifying their conditions, etc., come in to complicate the matter. Professor CREDNER wisely declares that these questions are not yet ripe for discussion, and that years must elapse before sufficient data can be obtained to settle them for the region in question. *

NEW PUBLICATIONS.

BALDWIN LOCOMOTIVE WORKS. *Illustrated Catalogue of Locomotives. Second Edition.* Philadelphia: J. B. Lippincott & Co. 1881. Quarto, 153 pp. Illustrated with photographs and wood-cuts.

This beautiful volume, issued by Messrs. BURNHAM, PARRY, WILLIAMS & Co., contains, besides the illustrated catalogue, a most interesting history of the great establishment which began in 1831 with the construction of the "Old Ironsides," by MATTHIAS W. BALDWIN. That engine was nearly a year in building; the present capacity of the works is ten locomotives per week. The one thousandth locomotive was turned out in 1861; the two thousandth in 1869; the three thousandth in 1872; the four thousandth in 1876; and the five thousandth in 1880. The establishment occupies nine acres, and employs, when running up to full capacity, some 3000 men. Drawings and patterns for more than five hundred

different sizes or styles of locomotives, for all existing gauges and every description of service, are included in the working lists. This catalogue contains a system of standard locomotives of approved pattern for the various requirements of freight, passenger, and switching service. Separate catalogues are issued for narrow-gauge and mine locomotives, compressed-air locomotives, locomotives for sugar plantations, logging railroads, rolling mills, etc., and noiseless motors and steam-cars for city railways. The existence of this vast business is in itself a triumph of organization and administration; but still more wonderful are the skill and enterprise with which it is kept abreast, not to say ahead, of the advance of inventive and constructive art in a peculiarly progressive line of industry. The world acknowledges the excellence of American locomotives; and the Baldwin works deserve the lion's share of credit for our well-earned supremacy in this field. *

LIGHTNING CONDUCTORS, *Their History, Nature, and Mode of Application. By* RICHARD ANDERSON, F.C.S., F.G.S., *Member of the Society of Telegraph Engineers, Assoc. Inst. C.E. With numerous Illustrations.* London and New York: E. & F. N. Spon. 1880. Quarto, 256 pp. (*Index.*)

This is in the first place a very handsomely printed book. It is a positive pleasure to read its clear, bold text. Its other merits are, an extensive bibliography of the subject, a historical *résumé*, given in a popular and fascinating style, a simple and convincing discussion of the principles, and the best means of protection against lightning, accounts of the methods in use in France, England, and America, and statistics of the damages wrought by lightning, proving the importance of protection. We notice, by the way, the following remark concerning this country: "In the case of the United States, the Chief of the Bureau of Statistics writes that no record of deaths or fires caused by lightning is kept—a somewhat curious admission on the part of such a practical and methodical country." Mr. ANDERSON is apparently ignorant that the Washington government does not control the internal affairs of the States, and that its Bureau of Statistics is chiefly devoted to commerce. It would be possible to obtain from municipal authorities, and perhaps from insurance departments or boards of underwriters, the statistics to which he refers. As might be expected, he lays great weight in his discussion and recommendations upon the earth-connection, as the essential element of protection. Its defectiveness may indeed be a positive source of peril. And, since this is a matter which ignorance often overlooks, or carelessness afterward forgets, we are not surprised to find him strongly urging a competent official inspection of lightning-rods. We heartily recommend this book to house-owners, as not only an interesting treatise in itself, but also an admirable preparation for short, sharp, and decisive debate with the lightning-rod man, who still roves through the country, seeking victims, as in the days of FRANKLIN. The philosopher's great discovery was nearly subjected, through the humbug of traveling agents, to complete disgrace and condemnation; and the question was seriously raised, "Does protection protect?" *

A HISTORY OF THE JETTIES AT THE MOUTH OF THE MISSISSIPPI RIVER. *By* E. L. CORTHELL, C.E., *Chief Assistant and Resident Engineer during their Construction.* New York: John Wiley & Sons. 1880.

Many months ago, we felt it our duty to point out that the claim of complete and triumphant success advanced in behalf of the Mississippi jetties was premature. We have nothing to retract on that score; it *was* premature. Moreover, we have not altered our opinions concerning the matter and manner of Captain EADS in the conduct of his controversy on the subject. But we promised then, and we should feel bound if we had made no promise, to recognize his success when it should be firmly established; and we have chronicled from time to time, in our news columns, the establishment and maintenance of the navigable channel. The appearance of Mr. CORTHELL'S book is a good occasion for the frank admission that the jetties are completely successful. While it is by no means certain that a new bar will not form in time, to obstruct navigation, it is evident that such a bar is not forming in the spot or at the rate expected by General HUMPHREYS and other engineers; and on that head, Captain EADS was right, and his chief critics were wrong.

It is quite unjust, however, to represent him as having encountered and brought to shame the united wisdom of the Engineer Corps of the Army. It is true that the late Chief of Engineers was opposed to the jetty plan; but it is no less true that leading officers of the corps, among whom was the present chief, recommended it. The difference of opinion on the subject was sharp and permanent; and it can not be claimed that the Corps of Engineers, as a whole, was arrayed on either side. The reports of various inspecting officers and boards, during the progress of the work, have been perfectly fair to Captain EADS; and we notice no disposition to deny or disparage the triumph he has gained, which is equally a triumph for those officers who approved his plan.

Mr. CORTHELL'S book is, as might be expected, afflicted with the partisan spirit. But apart from that natural defect, it constitutes a full and interesting history of this great public improvement. We notice that it contains a confident prophecy of the permanence of the new channel; and we do not wonder that the fulfillment of past prophecy on the subject should encourage further predictions of the kind. To speak frankly, we think this is another piece of "premature" assurance; but it may be justified by time, like the last; in which case we shall be equally ready to recognize the fact. And by all accounts, one thing is certain: the channel will last long enough to pay for itself, and to revolutionize an important part of the commerce of the country. Captain EADS and his associates have done a great work, and they deserve corresponding credit. *

THE PRINCIPLES OF THERMODYNAMICS, *With Special Applications to Hot-air, Gas, and Steam-Engines. By* ROBERT RÖNTGEN, *Teacher in the Polytechnic School at Remscheid. Translated, Revised, and Enlarged by* A. JAY DU BOIS, Ph.D., *Professor of Dynamic Engineering in the Sheffield Scientific School of Yale College. In Two Parts. Part I. General Principles—Hot-air and Gas Engines. Part II. Heat, Steam, and Steam-Engines. With 103 Wood-cuts in the Text.* New York: John Wiley & Sons. 1880. 8vo, 637 pp. (*Index.*)

The title-page of this book appears to attempt a comprehensive statement of its contents; but its general term "enlarged" scarcely explains the extent of the additions made by Professor DU BOIS to the original work of RÖNTGEN. Besides many original comments, these additions comprise an Introduction, consisting of two lectures by Prof. E. VERDET on the mechanical theory of heat; an abstract (chapter XIII.) by Mr. BAILEY WILLIS of PERNOLET'S *L'Air Comprimé;* an abstract of ZEURER'S theory of superheated steam, etc. VERDET'S lectures, delivered before the Chemical Society of Paris in 1862, are popular and interesting, but not necessary to the presentation of the subject of thermodynamics, since the treatise of RÖNTGEN goes over the same ground to a great extent. As is usually the case, the subject is made more difficult by discussing it without the aid of the calculus—a folly to which German authors are particularly prone. We sometimes wonder why they do not go further, and try to simplify their mathematical proofs for "practical" readers by omitting the symbols of algebra and "working the sums" by arithmetical methods only. Perhaps it could be done, with words and patience enough! We notice that in the volume before us, the calculus occasionally makes its appearance in the small print, from which we argue that Professor DU BOIS is not wholly oblivious of the fact, which so many instructors seem not to comprehend, that this is not an abstruse and obscure mathematical device, but a time-saving, labor-saving "short cut." Students should learn it and use it, rather than waste pains in plodding around it. The mechanical discussions of RÖNTGEN seem to us clear and well arranged, albeit there is some inconvenience in the English synonyms of his technical terms. "Body-tension," "disgregation work," and the like, have a strange sound, though the German compounds, of which they are translations, are natural enough. When Professor DU BOIS talks (p. 490) of "the in large part condensed steam," his English is a trifle too Teutonic. And we are not quite satisfied with his adoption of "living force" and abandonment of the better word "energy." If he has a reason for this, we have not found any statement of it.

Remscheid is a busy town in the Düsseldorf district of Rhenish Prussia. It has about 22,000 inhabitants, and famous manufactures of iron and steel tools and machinery. We should expect to find a teacher in its polytechnic school mindful of the practical applications of scientific theory; and this is indicated in Professor RÖNTGEN'S book. That Professor DU BOIS has submitted it to the test of the class-room, and found it a satisfactory text-book, is a special guaranty in its favor; and the questions, problems for practice, tables for reduction, etc., which he has added, greatly enhance the usefulness of the book in this direction. *

The *Zeitschrift für Bergrecht* (Magazine of Mining Law), published at Bonn, Germany, under the skillful editorship of Berghauptmann and Director Dr. H. BRASSERT, is, so far as we can recollect, the only periodical in the world which is devoted to this subject exclusively. Established in 1860, and appearing quarterly, it finished with the end of 1879 its twentieth volume. At the end of the tenth, a separate index, covering the series from the beginning, was published; and now appears, in a volume of 130 pages, a new general index for the whole score of years. We need not say how greatly this augments the practical value of the magazine. A glance at the index shows the range of topics which has been treated. It is divided into two parts, the first being systematic and the second alphabetic in arrangement. Under the former heading, we find the contents of the twenty volumes classified. Twenty-two pages are occupied with the titles of various codes and regulations which have been published by the magazine. Essays on the mining codes of various states and districts (nearly forty different treatises—three or four on American mining law) are enumerated in seven pages; the names of essays on various questions in mining law take up five pages; the names of cases and decisions by the courts and the mining authorities fill thirty-eight pages; and there are a dozen pages for the catalogue of books on mining law, etc., reviewed in the magazine. The alphabetical index of topics is by close printing got into forty-three pages. This merely mechanical description will suffice to show that the files of the *Zeitschrift für Bergrecht*, taken together with this complete guide to their contents, constitute an invaluable cyclopedia of the principles and records of mining law. *

THE DETERMINATION OF THE METER.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have been surprised to find, in an editorial published in your number for March 19th, the following sentence in regard to the relation to the terrestrial meridian passing through Paris of the unit base of the metric system of weights and measures: "Every body knows that the fraction was incorrectly determined, and that the standard meter is not a geodetic or astronomic observation, but a brass stick."

Disregarding the minor inaccuracy that the standard is not a "brass" but a platinum "stick," I beg leave to say that the statement itself is one which implies a discredit to their profession which engineers, astronomers, and men of science generally should not be willing to countenance. The currency which it has obtained, and which, I am sorry to say, is considerable, has been owing to the unwarrantable use made by controversialists—some of them even scientific men who might be presumed to know better—of certain abstract speculations resting upon an entirely imaginary basis made by a few mathematicians, among whom the most conspicuous is Col. A. R. Clarke, of the Royal Ordnance Survey of Great Britain, which, if accepted as determinations of fact, would throw discredit upon one of the most magnificent geodetic operations which the world has ever seen.

I have no disposition to argue the question here; but I venture to ask of your fairness the insertion in your valuable journal of the following extract from a letter addressed by me in 1878 to the Committee of the U.S. House of Representatives on Weights and Measures, through Dr. C. P. Culver, their clerk, in which are presented some considerations on the subject, which seem to me to be deserving of attention. I am, very respectfully, your obedient servant, F. A. P. BARNARD,

President American Metrological Society.

COLUMBIA COLLEGE, March 25, 1881.

Extract from a letter addressed to the Clerk of the Committee of the House of Representatives of the United States on Weights, Measures, and Coinage; and published by the Committee in the Appendix to their Report made to the Forty-fifth Congress.

"There is another assumption on which I wish to comment for a moment, which I find in two places at least in these replies. One of these places is in the report of Mr. Upton, who is entirely friendly to the measure we propose, and the other is in the reply of General Meigs, who is intensely hostile to this measure. Both of these gentlemen say that the meter has been 'ascertained not to be the ten millionth part of the Paris meridian.' General Meigs says: 'It has been ascertained that the meter bears *no relation* to that quadrant.' Mr. Upton says: 'It has been *demonstrated* that the length of the quadrant of the meridian was not accurately ascertained.' I am astonished at the positiveness of these assertions. Nothing of the kind has been either demonstrated or ascertained. On the other hand, I think the evidence is altogether in favor of the accuracy of the determination made by the great French Geodetic Commission. I do not, indeed, think it possible, in the present state of science, to determine with *positive* exactness the length of any quadrant of any meridian; but I do think it possible to determine the length within a limit which shall leave room for no *sensible* error; and that I believe was done in the case of the French meridian. What *has* been 'ascertained' is, that the earth is not regular in its figure. The speculations of Mr. Bessel, Professor Airey, and General de Schubert were founded upon an hypothesis which they pleased to assume to be true for the purposes of their calculations. They assumed that the earth, though not a sphere nor a flattened spheroid, was nevertheless a regular geometrical ellipsoid of three axes. If any thing has been proved by the surveys, it is that their hypothesis is a mere fancy. It follows that the most probable result to be obtained in endeavoring to determine the length of a meridian must be derived from *actual measurement on the meridian itself*. The mathematicians I have mentioned made inferences as to the Paris meridian by arguing from measurements on *other* meridians, as in Russia, India, and South America, on the supposition that the earth has a regular geometrical figure.

"Assuming as a basis such an hypothesis, that is to say, a supposition of the truth of which we have no sufficient evidence, and which in all probability is *not true*, there is no sort of anomalous result which can not be worked out when you attempt to combine the measurements of different meridian arcs with each other for the purpose of inferring the earth's figure, on the supposition that such figure is regularly geometrical. Colonel Everest, the accomplished director of the Indian Survey, by similar combinations obtained about seventy-seven different results, all giving different equatorial and different polar diameters.

"This fact alone shows the absurdity of trying to deduce the length of the quadrant of the Paris meridian by mathematical deductions from the measurements of meridians elsewhere. In the present state of science, as I have said before, the securest way of finding a result approximating the length of any given meridian is *to make the measurement on the meridian itself;* and that is what the French commission did. I suppose an abler commission was never employed in similar work anywhere.

"The publication in this country, and wide circulation (through a shrewd scheme of the late Professor Davies to scatter his crude views at the expense of the State of New York) of Sir John Herschel's lecture on *The Meter, the Yard, and the Pendulum*, has given to the speculations of Airey and De Schubert a notoriety among us which Colonel Everest's no less able and far more comprehensive computations have not attained. This lecture, though bearing the marks of Herschel's great ability, is, nevertheless, in my view, very little creditable to his judgment, and deserves by no means the amount of consideration which some have been disposed to give it. But the thing which astonishes me most in this matter is, that men of education, and men highly esteemed as men of science, should, at this day, so little understand this question as to say that there has been any thing 'demonstrated' to invalidate the accuracy of the established base of the metric system. I hope, therefore, the report of your committee, whatever may be the conclusions of the committee in regard to legislation recommended or discouraged, will not lend its sanction to a statement so entirely unfounded as that which I have referred to as disfiguring the otherwise able replies to the committee from the Chief Clerk of the Treasury Department, and from the office of the Quartermaster General."

COPPER SMELTING—ITS HISTORY AND PROCESSES.

By Henry Hussey Vivian, M.P.

(*Continued from page* 214.)

What happened in the dark period which followed the withdrawal of the Romans from Britain I am unable to say, nor do I believe that any authentic record exists. We must remember the condition of England at that time. Hume thus describes it: "The private and public edifices of the Britons were reduced to ashes; the priests (Christian priests) were slaughtered on the altars by those idolatrous ravagers; the bishops and nobility shared the fate of the vulgar; the people, flying to the mountains and deserts, were intercepted and butchered in heaps; some were glad to accept of life and servitude under their victors; others, deserting their native country, took shelter in the province of Armorica, where, being charitably received by a people of the same language and manners, they settled in great numbers, and gave the country the name of Brittany." Hume quotes from Bede, Usher, and Gildas to support his assertions. We must remember that the period which succeeded the withdrawal of the Romans was one of almost constant warfare. It is not until the time of Elizabeth that I can give any reliable account of what took place in England so far as copper is concerned. Dr. Percy mentions that Edward III., in the 15th year of his reign, granted the right of working the copper mines of Skildane, in Northumberland, and the copper mines of Alston Moor, in Cumberland, and the copper mine near Richmond, in Yorkshire, on payment of a royalty of one eighth to himself, and one ninth to the lord of the soil, to a company of adventurers, among whom was his brother Richard, Duke of Gloucester, and Henry, Earl of Northumberland. In the reign of Elizabeth, there was a rich copper mine at Keswick, in Cumberland, of which that queen deprived the Duke of Northumberland on the ground that it was a mine royal. It was reported that 4000 men were employed at that mine, but this is probably a great exaggeration. According to Camden, much good copper continued for a long time to be made at Keswick and Newland; but Webster, in 1671, wrote that now "the work is quite left and decayed, yet I am informed that some do now melt forth as much good copper as serveth them to make half-pennies and farthings." I beg especially to direct your attention to this smelting at Keswick, in Cumberland, because I think there is no doubt from the records brought to light by the laborious and intelligent researches of our fellow-townsman, Lieut.-Col. G. Grant Francis, that the first smelting-works in South Wales was built and worked by men from Keswick. I am very glad indeed to bear testimony to the great interest and value which attaches to Colonel Francis's work, of which I am about to avail myself to give you a short account of how copper smelting began in this district. I allude, of course, to the work published by Colonel Francis in 1867.* It is not my purpose to give the history of copper smelting down to the present day; those who desire to go into the details of that history will find them fully set forth in Colonel Francis's admirable work; but what I desire to do is, so far as I am able, to trace the history of the process known as the South Welsh process of copper smelting, which really now is the dominant process of the world. I remember well that Colonel Francis announced to me before he published his letters in 1867, that he had discovered that our Welsh copper-smelting process came from Germany. I at once told him, and I still retain that opinion, that such could not be the case, inasmuch as nothing analogous to it existed in any part of Germany even down to our time. I think we were both in part right. The evidence Colonel Francis has discovered puts it beyond a doubt that Germans were largely engaged in the Keswick smelting; but there is no tittle of evidence that I can discover that they brought our reverberatory process with them from Germany. In point of date, the story begins with a patent granted by Queen Elizabeth, in 1564 (page 29), to Thomas Thurland, Junior, of the Savoy, and Daniell Hogstetter, a German, giving them "power and authority to search, dig, try, rost, and melt all manner of mines and ores of gold, silver, copper, and quicksilver in York, Lancaster, Cumberland, Westmoreland, Cornwall, Devon, Gloucester, and Worcester, and the Principalities of Wales, as well within her Majesty's own grounds as others, on payment of a royalty." In the same year, a patent was granted "to William Humfrey, and Christopher Shutes, [a German, with similar powers within England, and the English pale in Ireland, except the places afore granted." Under the first of these patents, no doubt, the working and smelting at Keswick was carried on. Seventeen years later, in 1581, we find a letter from Mr. George Nedham, to Sir Francis Walsingham, setting forth in considerable detail the operations which were carried on under the direction of one Jochim Gaunse, Ganse, or Gans, for his name is spelt in these three ways. This letter is of a most interesting character, and contains, I believe, distinct indications of the first introduction of the system of copper smelting which has been ever since that date so largely practiced in this district, and which is now more or less adopted in almost every important copper-producing district of the world. I gather from this letter that the Keswick Works were managed by Mr. Daniell (possibly the Mr. Daniell referred to was Mr. Daniell Hogstetter) and Mr. Stemberger up to 1581, when Mr. Jochim Gans went there; that their practice had been to roast and smelt the ore and regulus repeatedly; as many as sixteen and even twenty-two fires are mentioned; half of these were roastings and half meltings, and the time occupied was as many weeks as fires. It is pretty certain that the roasting was done in heaps; for by no other means can I conceive it possible to roast and melt so many times without producing copper. Nedham says (Par. 3, page 20): "And further, the said Jochim doubteth not but after he hath rosted and smolten 3 or 4 saies of o'r copper ure in the great worke, after such manner as he hath devised since his coming from Keswick, to attaine to such further knowledge of the nature of all o'r copper ures in Cumberland and Westmoreland, that he shall be able to kill all corrupt humours in them and thereby to bring out more copper than heretofore hath byn and with lesser charge than is above written." Now here we have it distinctly stated that Jochim Gans *devised this manner* of working *after* he was at Keswick, and it is plain

* *The Smelting of Copper in the Swansea District, from the Time of Elizabeth to the Present Day.* By Major Grant Francis. Not published. 1867. 8vo, 126 pages. (Only fifty copies printed.) For announcement of the Second Edition, see ENGINEERING AND MINING JOURNAL, February 5th, 1881, p. 95.

that he did not bring the new "*manner*" with him. At the bottom of page 23 this passage occurs: "The number, nature, and propertie of which ix hurtful humours being wholly unknowne to Mr. Daniell and his Sonne or to any other of the Dutch workemen w'ch have bin sente from Germany to the mynes, that have bin in our copper ures, has bin the onely cause of the unreasonable charge and long tyme spent before they could make of these ures perfect rough copper; which copper after the order used in tymes past by Mr. Daniell and his Son thei never could nether yet can make under xxii tymes passing thro the fire and xxii weeks doing thereof and sometyme more." "But now by Mr. Jochims order of working we can—by once rosteing and once smelting the ure (w'ch shall be done in the space of three days), the same copper ure shall yield us black copper and copper stone which nether Mr. Daniell nor his Sonne could or yet can do under xvi times passing through the fire and xvi weeks in doeing thereof, and further in once rosteing and once smeltinge the same black copper and copper stone again, which shall be done in two days after Mr. Jochims order of workeinge, I will bringe the black copper and copper stone into perfect rough copper, which Mr. Stemberger cannot make under xxii tymes passing through the fire and xxii weekes in doinge thereof and sometymes more." Again at page 25, paragraph 4, we have the following, which distinctly proves reverberatory calcining, "but by stampinge the copper ure into powder and by rostinge the same powder after Mr. Jochims order before it be smolten, and then letting water passe through the same roasted powder, the water doth not only carry the vitriall from the powder or ure, but also carries with it the burnt sinder of the sulphur." Now these extracts show the nature of the improvements introduced by Jochim Gans, and I know of no other way in which such effects could have been produced except by the reverberatory calciner and furnace. It must be observed that Nedham reports that by once roasting and once melting, black copper and copper stone (regulus) were produced in three days. Such a thing I believe to be only possible by using reverberatory calciners. Again he states that in once roasting and once smelting, this black copper and regulus can be made into perfect rough copper in two days; this could only be done by the reverberatory furnace. Both these passages prove to me conclusively that the "manner" or "order" of working devised by Jochim Gans at Keswick was the reverberatory furnace process. He was doubtless a German, but he did not bring the process from Germany. I am not aware that there is any positive proof of the first use of the reverberatory furnace for copper smelting; but the extracts I have read contain such strong inferential proof that, until I hear something of a more certain character to the contrary, I shall give Jochim Gans the credit of having devised that most important "manner" of copper smelting at Keswick in Cumberland, in 1581–82, just three hundred years ago. Jochim Gans at the same time proposed to wash out sulphate of copper from calcined ore, and Nedham, in his report to Lord Walsingham, devotes much space to this plausible proposal. The same idea has occurred to many a man since his time, and in each case in practice it has proved as unprofitable as no doubt it did three hundred years ago; for we hear no more of poor Jochim Gans or his sulphate process.

The next notice we have which I think it worth while touching upon is contained in a correspondence between Ulrick Frosse and His Right Worshipful Thomas Smith, Esq., Principal Customer of London, at his house in Fanchurch street, in London, 7th July, 1584, therefore two or three years later than the extract just given. Customer Smith was a holder of one quarter part of a share of $\frac{1}{14}$th in the "Mines Royal Society" in 1580—$\frac{1}{56}$th part. Ulrick Frosse is mentioned by a Mr. Carnsewe as superintending a mine in Cornwall, and I infer that "he was a Cumberland man, because Mr. Carnsewe proposes that he should take such men as he is now acquainted with of our countrymen, and work in competition with certain German miners whom Mr. Weston had introduced at 'Trewoorth, near Perin Sandes,' Cornwall." On the 21st July, 1584, Thomas Smith writes to Ulrick Frosse, saying that Mr. Weston is going to Cornwall through Wales, and that he will take measures for transporting the copper ores to the "new melting-house at Neath, in Wales, which house, I understand, is ready, and we have taken order here that against he shall be ready to make copper he shall have from Keswick one of our copper makers, with an under melter and the Dutch carpenter, for a time, to serve and ready him in these causes." Now this fixes the exact date of the commencement of copper smelting in South Wales, namely, the autumn of 1584, and it shows that the skilled workmen came from Keswick. As the carpenter is specially called a Dutchman, I think it follows that the "copper maker" and "under melter" were not Germans. It is possible that the Dutch carpenter was a skilled mill-wright, as, later on, water-power is mentioned, probably in connection either with blast or stamping machinery. In the latter part of the same letter, Ulrick Frosse is told that "about Michaelmas next he shall go bye at Neath to take charge of our melting-house and things there." Frosse writes to Carnsewe on the 3d August, 1584, from Cutbert Parish, in Cornwall, a letter which seems to indicate that they had been trying to smelt in Cornwall, and had got the regulus and slag mixed up together. On the 9th June, 1585, Frosse writes from Neath to Mr. Carnsewe. He advises having sent samples of their stone, or regulus, and copper, and complained he was waiting for more and richer ores from Cornwall, and wanted "to repair his water-weere and furnesses." On the 4th July, 1585, Frosse writes to Denham that they "had founde out a waye to melte 24 C of owre everye daye with one furnas, the Lord be thanked, and if we may have owre enough from yo'r side, we maye, with God's helpe, melte with tow furnases in 40 weeks 560 tonnes of owre, having reasonable provision made for it; desiring yow from hence forwarde to sende such owres as yow have with as much speed as may be, not caring what owre it is." It appears, therefore, that, within less than a year after the works were started, Frosse felt master of the position, and was able to deal with whatever ore they sent him, but they had not yet refined copper. On the 7th March, 1586, Ulrick Frosse wrote to Mr. Carnsewe: "Wee looke dayley for the copper refiner from Keswicke, and have in readines as much copper roste and blake copper as will make a 20 tonne of good copper." He reported in the same letter that he "could melt in 7 hours 24 c. of owre, with 8 or 9 seks of chare coles and 3 horslod of sea coles; melting many sorts of owres to gither is the most proffet and will smelt a greattayll souner." Now this passage shows that they had so increased their melting as to do upward of 3 tons per 24 hours, and that they could take any kind of ore, but, above all, it proves that they were using reverberatory furnaces, because "sea coles" are suitable for such furnaces and not for blast-furnaces. The charcoal was probably mixed with the coal to prevent its binding too strongly, just as we now use "free" coal. The charge of 24 cwt. was curiously enough the same which was used by works up to a recent date. My object in giving these extracts is to show, not alone how copper smelting commenced in South Wales, which is of great local interest, but also how the South Welsh process of copper smelting, which may be said to be at this moment the ruling process of the world, began. The first introduction of copper smelting in Lancashire seems to have been in 1717, near Warrington. I think these extracts clearly prove that in 1581 Jochim Gans "devised a manner" of working copper ores at Keswick, which enabled him, by once roasting and once melting the ore, to produce black copper in three days from powdered ore, and I know of no other system than reverberatory furnaces by which that result could be attained; and we find Ulrick Frosse four years later, at Neath, with all the experience of Keswick, advising his employers that he had found out a way to melt a considerable quantity of ore per day in one furnace, "the Lord be thanked," and that he could deal with all kinds of ores, using sea-coal as fuel, which shows, beyond doubt, that he had improved Jochim Gans's reverberatories and was using them. This, I think, is the history of the invention by one man, and practical working out by another, of the South Welsh system of smelting copper. And now I naturally come to the consideration of that system, both in comparison with the European and Asiatic systems, and on its own merits.

When I use the term South Welsh system of copper smelting, I carefully avoid the term "principle" of copper smelting, because the same "principle" must be the base of all copper smelting. The ends are the same, but the means of attaining them are different. The difference lies in our use of reverberatory furnaces both for calcining and melting, while the other systems of the world depend (or perhaps more correctly depended) on roasting in heaps and melting in blast-furnaces.

Let us then first consider the processes which must be gone through in either case to produce copper from its ores. Now, what are its ores? If you turn to a work on mineralogy or chemistry, you will find an infinite variety of ores and combinations of copper, 25 at least; but in practice copper occurs in nine cases out of ten in combination with sulphur. In by-gone times, large quantities of carbonates came to us from Australia and Chili. Even now, the latter sends us occasional cargoes of green ores, containing carbonates, silicates, chlorides, oxides, and other combinations of copper; but these ores unfortunately bear but a small proportion to the ores containing copper in combination with sulphur. The same is the case in other parts of the world, and we may therefore direct our attention almost exclusively to the smelting of sulphide of copper in combination with sulphide of iron, earthy matters, and every known and unknown metal and mineral in creation. In all copper smelting, the first object must be to lose as little copper as possible in the slag, and to make the fusion easy. To this end, the copper smelter anxiously considers the varying nature of his ores. Some contain large quantities of sulphide of iron; these he takes care to roast or calcine highly, in order to obtain oxide of iron wherewith to flux the siliceous matter of other ores and to produce a regulus sufficiently rich in copper, his standard in that respect being from 30 to 35 per cent. Some ores containing much earthy matter he finds will not pay for calcining; that is, if he has plenty of ores of the first-named class at his command. The extent to which he calcines his ores depends on their nature and the proportion which one sort bears to the other, his object being to produce in his first melting a regulus, that is, a combination of copper, iron, and sulphur, of not less than 30 per cent or more than 35 per cent. Not less than 30 per cent, because if less, the subsequent processes are rendered more costly by the increased quantity which has to be treated; not more, because each prill which is held in mechanical suspension in the slag is richer in copper, and thus increases the loss, while there may even be some danger of getting oxide of copper into the slag. Now, whether this process is conducted in a reverberatory calciner, in a Gerstenhöffer, in a muffle (of which more hereafter), or in heaps as before explained, the objects to be attained are the same in all cases. The merits of the different systems of calcining or roasting may be shortly stated thus: The most ancient, namely, roasting or burning in heaps, is the least costly, provided the ore is sufficiently rich in sulphur or bituminous matter, as in the case of the Mansfeld Kupferschiefer; but it is not applicable to ores poor in sulphur, and in any case it is very tedious, occupying weeks, or even months, and therefore necessitating enormous stocks of ore in comparison with the quantity treated. The South Welsh calciner, on the other hand, is rapid in its action, never exceeding 36 hours, and for ordinary ores 12 hours, while the quantity treated is considerable and the cost of coal and wages consequently small. Our large calciners at Hafod treat 14 tons each charge, the time of course depending on the nature of the ore we are operating on. It is, I may assume, well known to all whom I am addressing that calciners are long and wide reverberatory furnaces; ours are 28 feet long by 13 feet wide (inside measurement), with a comparatively small fire-grate at one end; that the ore is spread evenly over the bed of the furnace, and is occasionally stirred or "paddled," that is, lifted with a flat, spade-like tool, so as to expose fresh surfaces to the action of the flame, which passes in rolling waves along the roof, a stratum of atmospheric air intervening between it and the ore, which supplies the necessary oxygen to combine with the sulphur, arsenic, and other volatile minerals, which are thus enabled to form their respective acid combinations and to pass off in the gaseous form, while the iron and other metals become oxidized. This calcining furnace is simple and under complete control. Any ore can be treated in it, and the process can be arrested at or pushed to any desired point. In this furnace, the sulphur gases are wasted, because they are diluted by the excess of atmospheric air present in the furnace, and they are at the same time rendered impure by admixture with the products arising from the combustion of the coal used for heating the calciner. It has, therefore, never been practicable to utilize the sulphur gases of ordinary calciners for the manufacture of sulphuric acid. In some copper works, calciners with double beds are used. I have tried them, but have found no advantage to arise from them, while they are more costly both in erection and repairs.

I have now to notice calciners adapted to the production of strong and pure sulphur gases for conversion into sulphuric acid. These are of three kinds, namely: Kilns in which the material is burnt in pieces of the size of road metal; the Gerstenhöffer calciner, in which it is burnt as powder; and the Muffle calciner, which is worked by transmitted heat. I believe other systems have been proposed, but I am not aware that they have been proved to be of practical value.

The Kiln system of burning is applicable only to material very rich in sulphur, say 20 per cent and upward, and in a rough state. It is the system universally adopted in alkali and sulphuric acid works for the treatment of pyrites rich in sulphur and iron and poor in copper. I can not state the exact limits within which this system is applicable; but I know of instances in which ore as low as 28 per cent of sulphur has been burnt. This system is at once the cheapest and most complete wherever it is applicable.

I next come to the beautiful invention of Mr. Moritz Gerstenhöffer, and now known by his name. This invention was brought to my notice by the late Mr. Herrmann in 1865. I at once saw its practicability, and caused two experimental furnaces to be built. They were found successful. We purchased the patent, and shortly afterward erected 43 calciners, more than sufficient to treat all our ores and regulus which were sufficiently sulphurous to admit of being thus dealt with. After fifteen years' experience, I can say Mr. Gerstenhöffer's invention is still a success. The principle upon which it is based is the same as that of the alkali-maker's kiln, namely, that the heat of the furnace should be maintained by the combustion of the sulphur of the material under treatment, and that no more atmospheric air shall be admitted than is necessary to maintain such combustion without fusion of the material, while the resulting sulphur gases shall be strong enough to be available for the sulphuric acid chamber. The alkali-maker was limited to the use of rough material. Mr. Gerstenhöffer solved the problem of using fine material. He constructed a vertical furnace 14 feet high, 4½ feet wide, 2½ feet deep (inside measurement); he placed across it fire-brick bars of triangular form, presenting one flat surface to the horizontal plane, and so arranged in rows above each other that the edges of the higher triangle should coincide with the center of the triangle next below. He heated his furnace to a good red heat by a coke fire temporarily lighted in the lower portion, and when at full heat he withdrew the coke and fed mechanically, through slits in the top, a constant and regular stream of the sulphurous material under treatment which, falling on the highest rows of cross-bars, formed a cone on each, and then fell on to the next bar beneath, and so on until each bar of the 70 contained in the furnace received its full charge, while the sulphur in both the falling material and that which lodged on the bars became ignited and burnt by aid of the atmospheric air admitted through holes in the front of the furnace, arranged just above the top of each cone of ore, thus keeping up the heat by the combustion of its own sulphur, and giving off pure and strong sulphur gases, sulphurous with some sulphuric acid. By this simple and beautiful arrangement, the problem of burning fine sulphurous ores and regulus, which had puzzled many a wise head, was successfully solved. I hope from the description I have given that the operation will seem plain and clear to the minds of my hearers, probably far simpler than we have found it in practical working; for I may say that we have only just arrived at what I consider satisfactory working; and when I say "we," I desire to acknowledge the zeal and intelligence which Mr. William Morgan and his son, Mr. William Edward Morgan, have displayed in perfecting this system. For example, I see that when I gave evidence before the Commission on Noxious Vapors, in April, 1877, I produced figures showing that we had during the previous year condensed and made into sulphuric acid 37·93, say 38 per cent, of the sulphur contained in the whole of the ores we treated; while from figures just furnished me by Mr. Morgan, based on calculations precisely similar to those contained in my answer (10,906), I find that during the year ending July, 1880, we condensed and made into sulphuric acid just 47 per cent of the sulphur which was contained in all the materials treated at the Hafod Works, showing an improvement of about 25 per cent. Again, in that evidence I stated our consumption of niter at 4·53 per cent upon our oil of vitriol, whereas it has now been reduced to 3·3 per cent, mainly by the use of the Glover and Gay-Lussac towers. I remember when it was 7 per cent; and when our then manager, upon my complaining of this excessive consumption, assured me, and proved by abstruse chemical calculations, that it could not be reduced, my reply was, "Never mind chemical formulæ; if you can't reduce it materially, I shall take it in hand myself." We are still a long way off the niter consumption of kiln-made acid, which does not exceed 1·3 per cent. I despair, however, from various causes, of ever reaching that low consumption. When I state that we condensed last year 47 per cent of our sulphurous gases, and lost 53 per cent, it must, of course, be understood that I refer to the whole products we treated, many of which are unsuited to the Gerstenhöffer, or any other close calciner. That loss is chiefly due to the melting furnaces and to the last process of roasting white metal into copper. That metal melts at so low a temperature that it is extremely difficult to calcine without running it together, unless an excess of air is present. In a lecture of this nature, which is intended to give a general and popular rather than a scientific account of copper smelting, it will not, I think, be expected that I should dwell at greater length on this or any other single process. Those who desire to see an account of the working of the Gerstenhöffer calciner in more detail, will find it in the evidence I gave before the Noxious Vapors Commission in 1877. It may be interesting to state that we last year condensed 3666 tons of oil of vitriol (concentrated sulphuric acid), which would otherwise have gone into the atmosphere, and been wasted.

(TO BE CONTINUED.)

COAL AND COKE IMPORTED INTO FRANCE IN 1880.—*La Houille*, of Paris, in a table taken from the customs statistics, shows that out of a total of 8,432,212 tons of coal, England supplied 3,291,655 tons, but no coke. The Belgian coal imported amounted to 4,157,000 tons; coke, 746,466 tons. The total quantity of foreign coke received was 943,465 tons. These figures show an increase of 800,000 tons of coal and 180,000 tons of coke over the imports of 1879.

THE RHENISH AND WESTPHALIAN COAL-FIELD.

The coal basin of this district—the richest on the continent, also called after the river which drains the southern portion, "the Ruhr basin"—extends eastward from the towns of Duisburg and Ruhrort on the Rhine over a space of about forty-four miles by twelve wide.

In a work recently published by Herr Gustav Natorp, there is some valuable information as to the mining industry of the Lower Rhine and Westphalia. In the space above mentioned, more than 20,000,000 tons of coal are raised annually, of which about 60 per cent is consumed in the district, and the rest exported. It follows that Westphalia contributes 55 per cent to the total coal production of Prussia, which in 1878 was as much as 35,500,000 tons, while Prussia itself produced 89 per cent of the whole coal raised in the German empire.

This enormous production is the result of the development of the Westphalian coal district during the last twenty or thirty years. The coal trade of Westphalia is of very ancient date; and although it can not vie with England in this respect, it existed nevertheless at the beginning of the fourteenth century. It suffered much in common with the general commerce of Germany from the Thirty Years' War; and it is only during the later years of the past century that a fresh impulse has been given to its development. In the year 1814, the coal production only reached 500,000 tons; but the introduction of steam into manufacturing industry soon gave a great impetus to the working of the Westphalian collieries.

As a result of this powerful agency, the output, which in 1850 was 2,000,000 tons, rose in 1878 to 20,000,000 tons. In 1860, the production was 4,490,000 tons, and in 1870, 11,570,566 tons; while in all probability the figures for 1880 will be 22,500,000. This great increase of the coal trade since 1850 has regularly kept pace with the iron trade and other branches of manufacturing industry. It has, moreover, altered the general physiognomy of the country. The principal towns, Essen, Bochum, and Dortmund, which until then were only small provincial towns of a few thousand inhabitants, are now large centers of industry; and villages formerly insignificant, such as Oberhausen, Gelsenkirchen, Schalke, and Horde, are now important seats of manufacture.

As regards the geological stratification of the Westphalian district, the number of coal seams passed through is considerable, the existence of at least seventy-four workable seams, more than twenty inches thick, being now proved. Their total thickness is 230 feet; and although their mean thickness is less than 3 feet, and but few are 10 feet thick, their geological position is not unfavorable for working.

The quality of the coal obtained from these seams, which may be divided into several groups, is excellent alike for steam, domestic consumption, and gas-making. A proof of the estimation in which the coal is held for the latter purpose is that, not only the west of Germany, but also a large number of towns in Holland, Belgium, and the north of France, prefer it for their illumination.

The coal suitable for gas-making is found in the group of large coals of the Westphalian basin. The discoveries already made prove that this group of seams extends to about forty-two miles from the Rhein-Preussen Colliery, on the west bank of the Rhine, in a straight line with the Courl Colliery to the east of Dortmund, while its breadth is eleven miles. In this space are more than eighty collieries working fourteen seams of a total thickness of 62 feet, or an average of nearly 4½ feet.

While the coal of the northern collieries belongs to the group of gas-coal, the seams on the south produce a semi-bituminous coal less suitable for coke. The production of salable qualities from all the collieries that produce coal for coke-making rose in 1878 to 11,000,000 tons.

For coke-making with Westphalian coal, there are at the present time 2400 coke-ovens at the collieries, 1700 at the iron-works, and 1200 belonging to private individuals, making a total of 5300 ovens; and it is said that during 1880 their number will be found to have increased by at least 500. The approximate quantities of Westphalian coal reduced in coke-ovens and the production of coke are given as follows: In the 5300 ovens, 3,352,500 tons of coal have produced 2,285,000 tons of coke.

At the same time that the production has increased, the markets and channels for the exportation of Westphalian coal have greatly extended during the last ten years. They now stretch in a north and northwest direction to the sea-coast on the north, toward the east to Berlin, to the southeast as far as Saxony and Thuringia, and toward the south to Bavaria, Würtemburg, Baden, and Switzerland, while on the southwest the iron districts of Alsace-Lorraine derive a portion of their coal supply from the same source. Lastly, a considerable proportion of the coal used by the gas companies in Belgium and the North of France is also obtained from Westphalia.

The railroads possess most of the coal traffic, 80·87 per cent of the 20,000,000 tons raised in 1878 being carried by rail. The principal lines of the four great railway systems which serve the district are over 400 miles long, and from 70,000 to 80,000 wagons are engaged in the coal traffic. In 1879, 2,000,000 tons were sent by navigable canals to Holland, Belgium, and South Germany. The railroad rates have greatly diminished, being now as a rule only two *pfennige* per ton per kilometer, or about 0·4 d. per ton per mile.

The codification of the Prussian law has greatly contributed to increase the mining industry and encourage the spirit of enterprise. Owing to this law, which came into force in 1865, the interference of the state in mining matters, which had become intolerable, ceased; and the mining industry gained the autonomy which it had so long sought.

The subdivision of the mining property in Westphalia is very great. More than 193 collieries participate in the annual production of 20,000,000 tons, the greatest output of a single company not much exceeding 750,000 tons. The miners possess relief funds, and have established several benefit associations. In 1878, the friendly societies paid over £212,500 in relief and expenses of management for a total number of 74,364 men.

The quantity of coal proved, with that which undoubtedly exists, is estimated at 100,000,000,000 tons. In case the output should eventually attain the total production of Great Britain, that is to say, 140,000,000 tons per annum, the stock of coal in the South Rhenish and Westphalian coal basin would last seven centuries, that is to say, until 2581.—*Monitour Industriel.*

THE GOLD REGION NEAR BRIGUS, NEWFOUNDLAND.

By Alexander Murray, C.M.G., F.G.S.

Reports having been circulated for some time past that gold had been discovered in quartz veins in the region near Brigus, of Conception Bay, I proceeded to Brigus on the 27th of September, and selected and marked out a series of spots upon the quartz for trial; and on the following day, which proved a rainy one, and untit for experimenting, I inspected another area, about two miles southwest from the former place, and nearly in the strike of the quartz-bearing strata, where I found the rocks with their reticulations of quartz veins to be nearly identical in all respects. This latter place is known locally as Fox Hill, and from it sundry specimens of gold are said to have been taken, one of which is in my possession. It was not till the 29th that we were able to reach the spots I had first indicated for experiment. The place where I finally determined to try the first blast is situated near the so-called Brigus Lookout, about equidistant from two peaks, each a triangulation point of the Admiralty Surveyors, the hight above the sea being marked on the chart respectively 408 and 413 feet.

By the first blast, from two to three cubic feet of rock was removed, all of which was carefully broken up, washed, and examined; which operation resulted in the display of ten or twelve distinct "sights" of gold. In one fragment, about 5 pounds weight, largely charged with dark green chlorite, the gold shows itself in three places distinctly, while many small specks are perceptible by means of a good lens. The fracture of a fragment of milky white and translucent quartz, which was broken off the large piece; revealed two patches of gold, both of which together, if removed from the matrix, would probably produce about a pennyweight of the metal; while several small masses or nuggets were found adhering to the small broken fragments of quartz at the bottom of the pail in which the rock was washed, the largest of which contained about 10 or 12 grains of gold. From some specimens in which no gold was perceptible to the naked eye, and which I had selected for analysis, I found among the dust at the bottom of the bag in which it was carried a small nugget weighing three grains. A second shot was tried on the same lead at a few yards distant from the first, but, owing to our imperfect implements, it failed to blow out more than a few pounds of rock, in which no gold was perceptible. In the specimen I procured from Fox Hill, the metal occurs thickly in the minutest specks, scarcely if at all perceptible to the naked eye, but readily recognized under the lens, where it chiefly surrounds a small patch of chlorite.

The rock formation intersected by these auriferous quartz veins is of Huronian or Intermediate age, belonging to Division C of Report for 1868; or the group of strata next below the *aspidella* slates of St. John's. The group consists chiefly of greenish fine-grained felsite slates, which, judging by the weathering of the exposed surfaces, are also magnesian and ferruginous. The cleavage is exactly coincident with the bedding, and the slates occasionally split into very fine laminæ, but frequently into strong, stout slabs, which are used to a considerable extent at Brigus for paving, for hearth-stones, and for building foundations and walls. A dip taken on the beds just in front of the place where the gold was found, N. 56° W. by compass, or N. 88° W. from the true meridian angle of inclination of 45°. Parallel joints intersect the strata bearing S. 80° W. Magnetic, or S. 48 W. True. By the side of the road at Brigus, the dip on some strong slabby beds was found to be N. 42° W. Mag., or N. 74° W True, angle of inclination, 40°.

A rough and hummocky belt of country, from three quarters to one mile wide, which forms the nucleus of the peninsula between Bay de Grave and Brigus harbor, is thickly intersected by reticulating quartz veins, varying in thickness from less than an inch to upward of a foot, which often appear to ramify from a central boss or great mass of quartz, often extending over many square yards, and usually forming low isolated hummocks or hills. The general run of the belt is as nearly as possible northeast and southwest from the true meridian, having been traced in a southwest direction from Brigus Lookout as far as Fox Hill; and as I am informed, can be traced for several miles more in the same direction. Thus, although many of the veins both small and large, may be seen for considerable distances to run exactly parallel with the bedding, the net-work of the whole mass runs obliquely to the strike of the beds, which are also minutely intersected by the smaller veins crossing and reticulating in all directions. I nowhere observed any thing to indicate a *true fissure-vein*, and consider these with gold as altogether *veins of segregation*.

The resemblance in general character of the strata, with their included auriferous quartz veins in Newfoundland, to those of Nova Scotia, must strike any one who has visited the two countries with the purpose of studying their geological features; and I venture to say, that the description given of the latter country by Dr. J. W. Dawson might, in many respects, equally apply to the former; although, according to that author, the auriferous country of Nova Scotia is supposed to be of Lower Silurian age; while that of Newfoundland is undoubtedly unconformably below the Primordial Group, which, with abundant characteristic fossils, skirts the shores of Conception Bay. Without presuming to offer an opinion as regards the age of the Nova Scotian strata, the fact of the resemblances is suggestive.

Chlorite is profusely disseminated through the quartz veins, filling up cracks and drusy cavities; and it was observed that the visible gold was always in or near a patch of chlorite. Some specimens which were procured at the place of trial presented small cubes of galena, minute cubical iron pyrites, and, in a few instances, small crystals of sulphide of copper, together with specks or grains of gold.

That a large area of country in the region referred to is auriferous, there can scarcely be a doubt, although nothing short of actual mining and practical experience can possibly prove what the value of the produce may be; or whether the prospects of obtaining a remunerative return for the necessary outlay are favorable or otherwise. The specimens which have been obtained, although an unquestionable evidence of the presence of the precious metal, can not by any means be taken as indicative of a certain average yield; indeed, to quote the words of Dr. Dawson, from his *Acadian Geology*, p. 626, "It is not easy from mere inspection of the vein-stone to predicate as to its value, since the gold is *usually invisible* to the eye;" and again, at the following page, when treating of the characteristics of the Waverley mine, he says, "*Visible* gold is rare in this vein at present, the greater part being in a minutely disseminated and *invisible* state." An analysis of quartz collected, in which gold is imperceptible to the naked eye, may aid in revealing some evidence of its constancy, and may throw some light upon the possible average of superficial contents over certain areas under similar circumstances; but it may safely be predicted that the irregularities of distribution, so conspicuously displayed by the veins on the surface, will extend beneath it, and that it will be mainly on the stronger and more persistent bands, where intercalated with the strata, that mining will extend to any considerable depth.

ASPHYXIATION BY CARBONIC ACID, AND INTOXICATION BY CARBONIC OXIDE.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The statement that Mr. Criner had administered a glass of ammonia to a man asphyxiated by carbonic acid and carbonic oxide (contained in Professor Egleston's translation of Mr. Meurgey's note on that subject in your issue of 12th inst.) has been corrected by him (*Société de l'Industrie Minéral, Comptes Rendus Mensuel*, 1880, p. 285): "He would never have ventured on this, but gave a glass of coffee to which ammonia had been added."

I do not know what is the greatest safe dose of ammonia, but it is well to prevent trouble from persons taking the statement in yours of the 12th inst. as a precedent.

Mr. Meurgey mentions as a striking symptom his inability to speak, although perfectly conscious. I noticed this in the case of two men who were badly poisoned by blast-furnace gas at these works two years ago. They could not speak a word, although able to sit upright and take the ammonia and water (six drops to a pint tumbler of water) which we gave them.

GLENDON IRON-WORKS, March, 1881. F.

PROGRESS IN SCIENCE AND THE ARTS.

Rock-Weathering, as Illustrated in Churchyards.—In a paper read to the Royal Society of Edinburgh, and printed in *Nature*, Prof. Archibald Geikie, F.R.S., after stating that "comparatively little has yet been done in the way of precise measurement of the rate at which exposed surfaces of different kinds of rock are removed in the processes of weathering," records his own observations in the older burial-grounds of Edinburgh. He first alludes to experiments instituted by Professor Pfaff, of Erlangen, who exposed to ordinary atmospheric influences pieces, carefully weighed and measured, of Solenhofen limestone, syenite, granite (both rough and polished), and bone. The loss, in three years, from the limestone was equal to the removal of a uniform layer 0·04 millimeter in thickness from its general surface. But the time was too brief for general deductions as to the real average rate of disintegration: and therefore Professor Geikie selected the burial-grounds. Although, in a town, where sulphuric acid is copiously evolved into the atmosphere, disintegration may be above the normal rate, there is less difference between town and country than might be supposed. The more acid town rain has less effect upon surfaces of stone, protected as they are to a certain extent by the dust and smoke which settle upon them, and by the crust of organic and inorganic matter deposited. In the district selected, the materials used for monumental purposes are: 1, Calcareous, including marbles and limestones; 2, sandstones and flagstones; 3, granites.

1. The calcareous tombstones observed are generally ordinary white saccharoid Italian marble, and sometimes a pink Italian shell-marble and a finely fossiliferous limestone, containing fragments of shell and foraminifera. Here, three phases of weathering are sometimes observed on the same slab, namely, superficial solution, internal disintegration, and curvature with fracture. *Superficial solution* is effected by the carbonic acid and partly by the sulphuric acid of town rain. Two years' exposure to the prevalent westerly rains suffices to remove the polish and to give the surface a rough, granular character. In one case, so loosely are the grains held together that a slight motion of the finger will rub them off. In a way described by the author, the former artificial surface of the marble disappears, and is changed into one that rather recalls the bare, bleached rocks of some mountain-side. The rate at which this transformation takes place seems to depend primarily on the extent of exposure to rain. Slabs facing the northeast, and with a projecting architrave keeping off much of the rain, retain their inscriptions legible for a century or longer. But in the case of a monument to a person who died in 1785, decay had been so rapid as to require restoration in 1803, and the inscription is now for the most part utterly illegible, the marble being dissolved away over the center of the slab to the depth of about a quarter of an inch. In most cases, superficial solution has been retarded by the formation of a gray or begrimed crust. *Internal disintegration.* Where superficial solution is feeble, the monuments in the older churchyards are frequently covered with a dirty crust, beneath which the stone is found to be merely a loose, crumbling sand. This crust cracks into a polygonal net-work, "the individual polygons occasionally curling up so as to reveal the yellowish-white crumbling material underneath," and also rising in blisters, the inscription being perfectly legible. The moment, however, the crust is broken up, the decay of the stone is rapid. The crust, in color, varies from a dirty gray to a deep brown black; in thickness, it varies from that of writing-paper up to sometimes a millimeter. Submitted to microscopic examination there were revealed particles of coal, grains of quartz-sand, angular pieces of broken glass, fragments of red brick or tile, and organic fibers, held together by a cement which is mainly sulphate of lime. The cause of the rapid disintegration of the marble is mainly due to the action of carbonic acid in the permeating rain-water, whereby the component crystalline granules of the stone are partially dissolved, and their mutual adhesion is destroyed. *Curvature and fracture*, the most remarkable phase, is only to be observed in the slabs of marble which have been firmly inserted into a solid frame-work of sandstone and placed in an erect or horizontal position. "It consists in the bulging out of the marble, accompanied with a series of fractures." One oblong upright marble slab, 30¼ inches high, 22⅜ inches broad, and three quarters of an inch thick, and

probably smooth and upright in 1838, has escaped from its fastenings on each side, though firmly held at the top and bottom, and "projects from the wall like a well-filled sail." "Such has been the expansive force of the marble that the portion of the sandstone block in the upper part of frame exposed to the direct pressure has begun to exfoliate, though elsewhere the stone is quite sound." Among the more advanced stages of curvature and fracture, one "has a peculiar interest from the fact that it occurs on a tablet erected to the memory of one of the most illustrious dead whose dust lies within the precincts of the Greyfriars—the great Joseph Black. He died in 1799." In the center of the tomb raised over his grave, on a large upright slab of white marble, "a Latin inscription records with pious reverence the genius and achievements of the discoverer of carbonic acid and latent heat, and adds that his friends wished to mark his resting-place by the marble while it should last. Less than eighty years, however, have sufficed to render the inscription already partly illegible. The stone, still held firmly all round its margin, has bulged out considerably in the center, and on the blister-like expansion has been rent by numerous cracks which run on the whole in the direction of the length of the stone." Professor Geikie is inclined to believe that the principal cause of the change is the action of frost. White statuary marble is naturally porous, and is rendered still more so by the internal solution already adverted to, and hence is capable of imbibing a relatively large amount of moisture. "When this interstitial water is frozen, its expansive force as it passes into the solid state must increase the isolation of the granules and augment the dimensions of a marble block." The results of Professor Geikie's observations show that slabs of marble, save in exceptionally sheltered situations, are destroyed in less than a century in a climate and atmosphere like those of Edinburgh.

2. Sandstones and flagstones, when properly selected, are remarkably durable. Some of the Edinburgh sandstones contain 98 per cent of silica. A solid block of freestone, erected a few years after 1646, ordered by the Scottish Parliament to be defaced in 1662, but repaired after 1688, still shows distinctly the original chisel-marks, and the incised lettering remains quite sharp after nearly two hundred years. The causes of decay in arenaceous rocks are first, the presence of a soluble or easily removable matrix, such as clay, carbonates of lime and iron, and the anhydrous and hydrous peroxides of iron. Secondly, "where a sandstone is marked by distinct laminæ of stratification, it is nearly certain to split up along these lines under the action of the weather, if the surface of the bedding planes is directly exposed." Thirdly, "where a sandstone contains concretionary masses of different composition or texture from the main portion of the stone, these are apt to weather at a different rate."

3. Granites, in Professor Pfaff's experiments—plates of syenite and granite being employed by him—all showed a slight loss of weight at the end of a year. "The annual rate of loss was estimated by him as equal to 0·0076 millimeter from the unpolished, and 0·0085 from the polished granite." Granite has been employed for too short a time as a monumental stone to afford any ready means of measuring, even approximately, its rate of weathering. "Even the most durable granite will probably be far surpassed in permanence by the best of our siliceous sandstones. But as yet the data do not exist for making any satisfactory comparison between them." Those of our readers who may desire to read Professor Geikie's lecture in full, and who have not access to *Nature*, will find it in the *Popular Science Monthly* for March.

Nickel Mining in Norway.—The *Ironmonger* says that the increased use of nickel in the arts has caused the production of a much larger supply of the metal. From 1861 to 1865, there were but eleven nickel mines in operation, with an average annual yield of 3450 tons. In 1866, the returns rose to 5200 tons from 14 mines, and increased to 34,550 tons in 1875, the greater part of which was exported. Norway yields about one third of the entire nickel consumed in the world.

GENERAL MINING NEWS.

ARIZONA.

The Tombstone *Epitaph* has the following:

ARIZONA QUEEN.—This company, which started work on its claim on the 1st ult., was incorporated in Boston last January, under the laws of Maine. The Queen joins the Sulphuret on the west, and the Fremont (formerly known as the Mayflower) on the south.

GRAND CENTRAL.—The cross-cut west on the 400 level is in 30 feet. Progress has been slow, owing to the hardness of the formation. The rock is, however, growing softer and easier to penetrate. It is stated, though not authoritatively, that new hoisting-works are now negotiating for, of a capacity greater than any now running in the territory. The mill continues to work satisfactorily.

SILVER BELL DISTRICT.—From a letter written recently to this office, we extract the following:

The prospects in the Silver Bell District are very promising, both in silver and copper mining. Arizona is a great and promising country for minerals, and the time is not far distant when it will be so considered by moneyed people in the East that now know little or nothing about it.

SULPHURET.—Recent reports state that, after cutting the station in the 500-foot level of the main working shaft, a cross-cut was started east, and almost at its inception the face went into a massive body of rich carbonate ore. The cross-cut is now in 10 feet of solid carbonates; no prospect of abatement. The Sulphuret lies in a most favorable position, being bounded on the east by the West Side and Tough Nut, on the north by the Tranquillity and Head Center, and on the west by the Flora Morrison, and having for near neighbors the Contention and Grand Central on the southward. Indeed, it is thought by many that the strike of yesterday is the famous west ledge of the Grand Central.

VIZINA.—The main shaft is down 248 feet. The winze at the 100-foot level is down 20 feet and the station cut out; a strong vein of good ore is uncovered. The regular weekly amount of ore, 80 tons, is sent to the mill, but notwithstanding this, the prospect-work is daily increasing the ore-reserve, and to-day there is more ore in sight than ever before.

CALIFORNIA.

GREENVILLE DISTRICT.

The following notes regarding the mines of this district are taken from the *Bulletin* of the 16th ult.:

CHEROKEE.—The mill is running ten stamps, the roads are in fair condition again, and work steadily progressing at the mine. The shaft is down within one set of the point where the next level is to be run, and from this point drifts will run north and south to cut the main ledge, which is worked.

GREEN MOUNTAIN.—The mills have done steady work thus far this month, with even better results proportionately than for their run of last month. This comes from a slight improvement in the ore in the stopes, and also from additional silver plates now in use. As the new mill is producing the largest proportion of amalgam, it has been thought best to remove the retort-house to the lower plant, where a new one is constructing.

PLUMAS NATIONAL.—We are informed that very satisfactory tests have been made in the chlorination-works of this company, and the clean-up will fully equal the expectation of all concerned, and prove highly satisfactory to the stockholders and officers. The percentage of free gold secured from the mortars is largely on the increase.

SOUTHERN EUREKA CONSOLIDATED.—On Sunday, March 13th, the new 10-stamp mill of this company began operations.

CANADA.

PROVINCE OF ONTARIO.

The following we condense from a late issue of the Montreal *Herald*:

We have received the following information from Mr. George G. Francis in regard to the progress made at the Canada Consolidated Gold Mines, Marmora:

At the first annual meeting of the company, held at the temporary office, 27 Park Place, New York City, in January last, resolutions were passed that the reports and statements of accounts should be printed at the earliest moment for distribution among the shareholders and subscribers to the stock. This, it is expected, will shortly be in the hands of the shareholders. A permanent Board was elected, with Mr. Henry Loveridge, President of the Maryland Coal Company, as President. The company now has offices at No. 5 Cortlandt street, and Mr. J. W. Loveridge has been appointed Secretary and Treasurer.

The company has secured the services of Mr. Ernest Gaujot as Superintendent of the mines. Mr. Gaujot is a mining and mechanical engineer, and has had large practical experience. An engineer and chemist who has had special training in the treatment of arsenical ores has been appointed as assistant superintendent to Mr. Gaujot, and sails from England on the 10th ult. for Canada (and has since arrived). He has visited the Great Devon Consol mines, in Devonshire, England, where there are large works for the treatment of arsenical ores. No estimate of profits to be derived from the sale of arsenic, produced as a by-product in the form of arsenious acid, etc., etc., was set forth in the prospectus of the company, although it is expected that it will form no inconsiderable item of profit. Best white powdered arsenic is worth now £10 10s. f. o. b. Falmouth, and nearly if not all the arsenic used on this continent is imported. Mr. Gaujot took charge of the mines and entered upon his duties toward the end of December last. Since then, the only shaft which has been worked is the deep shaft. This shaft has been put down since from 145 feet to 152 feet, and it has been "in good ore" all the time. The first levels in this shaft start at about 70 feet from the surface, and were driven about 45 feet along the lode each way north and south, and about 12 feet each way has been added, making the first level about 114 feet long. The second level starts at 140 feet from the surface, and in December was driven in about 12 to 14 feet north and south of the shaft, to which about 10 to 11 feet have been added each way, making the total length of this level from 44 to 50 feet. These levels are driven "all in ore," without signs of either foot or hanging-wall. The mode of working by horse whim and manual labor has of necessity been slow. About 15 men underground and 25 surface hands have been employed. The frames and machinery for the shaft-houses are erecting, and will be finished in the course of two weeks. The sinking of the Tuttle and the other shafts will then be proceeded with, and the Tuttle shaft will be made the main shaft. Air-compressors have been contracted for and are expected very shortly. The air-compressors will run 12 of Rand's compressed air drills, 8 of which (there not being room for more as yet) will be put to work. The work of sinking by manual labor is about 10 feet, and drifting about 15 feet a month. With the aid of compressors and drills, sinking can be prosecuted at the rate of about 20 feet in the sink and 30 feet in the drift per month. A cross-cut, to intersect the other veins to the west at 140 feet in depth, has been started, and is now in 20 feet. This will also be resumed as soon as the hoisting-machinery and air-drills can be used. On the surface, clearances have been made and the material got ready for the erection of concentrating-works. A great quantity of cord-wood, lumber, and timber has been contracted for, and delivered on the property. A stop-log dam to produce the water-power was made last fall. Telegraph poles have been distributed along the line, to extend the line of the Montreal Telegraph Company from Marmora to the mines, and will be put up and the connections made as soon as the frost is out of the ground. The old stamp-mill house, with the engines, etc., therein, will be used as a house for the air-compressors, repair-shop, etc., etc., and the new mill-house will be at the southern extremity of the Tuttle property. It will be 120×60 feet, and will contain, when completed, 3 sets of Blake's rock-crushers, 3 sets of Cornish rolls, 5 sets of revolving screens, 14 jigs, drying-furnaces, and 2 calcining-furnaces, and the necessary works for the final extraction of the gold. The whole is calculated to treat from 100 to 125 tons of 2000 pounds of ore per day.

COLORADO.

CLEAR CREEK COUNTY.

Speaking of the mines around Idaho Springs, the Denver *Tribune* says: The existence of gold and silver-bearing lodes in Virginia Cañon, on Seaton Hill, near Spanish and Montgomery bars, and the headwaters of Chicago Creek, as well as gold placers bordering the line of Clear Creek from Fall River to Floyd Hill, was made known to the earliest pioneers. But until within the past two or three years, there has been no systematic development of these resources. About the 1st of July, 1861, the somewhat celebrated Seaton mine was discovered by the gentleman whose name it bears. It is one of the best defined, most regular, and perfect fissures in the State, and it has been very thoroughly developed. This, unfortunately, is about all that can be said in its favor. Though the mineral vein is large and continuous in all the workings, the grade so far is so far below the profitable standard, at present charges for treatment, as to render its further operation impracticable. If the misguided theory which is widely believed, that these veins become richer with depth, were true, the Seaton might one day rank with the most noted of its contemporaries. As it is not, we shall have to wait until the cost of reduction is so materially cheapened as to come much within the present value of its ores, or until smelting-works shall be established which will give all the precious contents to the owner for the sake of the lead. But the Seaton is only one of the developed mines on this beautiful slope. The Tropic and one or two others are actively worked by good managers, and are yielding large rewards. Desultory prospecting all along the line of Virginia Cañon long ago established the existence of a large belt of silver-bearing lodes, coursing through the slopes in a northeasterly and southwesterly direction, and it follows that a tunnel on either side of the cañon, driven at right angles with this belt, will cut them at varying depths, and greatly reduce the expense of working them. Many attempts have been made to achieve this result, but until now all have failed for the want of capital, energy, and perseverance. There is a great interest in the developments now making in Cascade District, near the head of Chicago Creek, and its immediate neighborhood. Some large veins of excellent ore, bearing gold and silver, have been opened there. Unfortunately, there is no market for any of the products of mining in the entire region. The nearest are Golden and Argo. A sampling agency, at least, at Idaho Springs will soon be a necessity; for the districts are producing considerable quantities of valuable ore, which will be steadily augmented as the work proceeds. At Spanish Bar, the Hukill is the only mine under prominent operation. Mr. Osbiston retired from the management a short time ago, and was succeeded by Colonel Webster. Whether intentional or not, there has been a great deal of mismanagement about the Hukill, and it is plainly

apparent that vast sums have been squandered in needless work. It is much too late to complain, however, and as the present direction seems to be making the most of its resources, which are large, the future promises to be much more encouraging and profitable than the past. The Mayflower, immediately below on the bar, is idle. The reasons for it are clearly apparent on the surface, and its counterpart may be found among the records of exploded companies that were too highly inflated upon an unsubstantial basis.

FREELAND.—The Georgetown *Courier* says that this company gives employment to a force of about 125 men, and is shipping about 2 car-loads of concentrated ore per day to the Pueblo smelter, the assay value of which, in gold, silver, and copper, is about $60 per ton. A large amount of new ground is said to have been opened up during the past winter; and as soon as the weather becomes more mild, it is understood that a concentrating-mill will be run with a double shift, which will double the amount of the shipments. With the ground now opened, it is thought that the product can be doubled with but little more expense than the mine is now under.

CUSTER COUNTY.

The Silver Cliff *Gazette* approximates the daily output of the several mines as follows:

Silver Cliff Mines.	Tons.	Rosita Mines.	Tons.
Bull-Domingo	90	Bassick	35
Silver Cliff	100	Twenty-Six	1
Milkmaid	3	Polonia	6
Total	193	Total	42

SILVER CLIFF.—The *Gazette* of the 19th says: But for the non-arrival of a few hundred feet of water-pipe, the new mill of the Silver Cliff Company would now be at work; for it is completed in every detail, and only waits the connection of its reservoir with the city mains. The machinery has all been tested, and in so far as can be determined prior to the actual work of milling ore, the finished mill seems to be all that is required and likely to solve the problem of treating successfully the milling ores of this district. As has been stated heretofore, the ore-house, rock-breakers, batteries, tanks, pans, and settlers all rest upon separate foundations, which are in turn distinct from that on which rests the mill superstructure proper. The result of this provision is manifest when one sees all the machinery in motion, and feels but the slightest perceptible jar in any portion of the building. The *Gazette* has information that the new management of the Plata Verde Company will inspect this mill as soon as practicable after it is in operation, and will determine upon a line of action when the result of a working test is known.

GILPIN COUNTY.

ROLLINS.—The Central City *Register-Call* of the 22d ult. contains the following: Manager George W. Barrett, of the Rollins Gold and Silver Mining Company, was in the city last evening, and in an interview with him the mining reporter of the *Register-Call* ascertained that three tunnels are to be driven, those of the Perigo, Crown Point, and Colorado, with stronger mining forces than ever before. At the mouth of these enterprises are piled on the dumps large quantities of ore, which will be sent to the smelters as soon as the road leading down Lump Gulch is fairly opened. The heavy snow-falls of the past winter have retarded the active development of many veins belonging to this corporation, which owns one of the largest properties in the State of Colorado. Colonel Rollins, now in the East, has witnessed the workings of a new and improved method for keeping the tail-races of creek mines free from the accumulation of *débris*, which has proved such a source of annoyance to many gulch and creek mines. This method will be adopted by the Rollins Company, when it starts up its placer mines below Rollinsville on South Boulder. These mines will be worked as soon as the weather permits.

DEFIANCE.—According to the *Register-Call*, this company's shaft on the Missouri mine has reached a depth of 160 feet, and is sinking by contract at the rate of 9 feet a week by three 8-hour shifts of two men each. The vein of ore has been small for 30 feet, but is now growing larger and the ground is regarded as being more favorable. Just under the 100-foot level, the shaft passed through a body of ore, for 20 feet, from 10 to 18 inches wide, which gave good results, both at the stamp-mills and at the smelters. The 100-foot level east is just at the bottom of the old workings, and is in 80 feet, all except the last 15 feet through old workings, and had to be carefully timbered. The end of the level is 15 feet beyond the old Cisler shaft, and for that distance is in ground not explored by former workers. This unexplored ground has been very hard and barren until the last three feet, but now shows a 6-inch vein of ore and every indication of opening out into a substantial ore-body. The 100-foot level west is in 80 feet, and the breast in an ore-body nearly 2 feet wide. At 50 feet in from the shaft on this level, is a mill hole up into the back of the old workings, where stoping is done in an ore-body from 10 to 12 inches wide, mostly smelting ore, rich in copper, and carrying 10 to 15 ounces silver and 3 to 4 ounces gold per ton. Not much but exploratory and preparatory work has been done, but the mine has paid about one third of its expenses since the first of January.

LAKE COUNTY.

AMIE.—The Leadville *Herald* reports but little doing on this mine except sinking the No. 2 shaft. This has reached a depth of over three hundred feet, and though not in ore, has good indications. Only about ore enough is broken in other parts of the mine to keep up expenses.

BIG PITTSBURG.—A small lot of selected ore from this mine netted $3527. The strike recently reported was made in an uprise to the north from the shaft, and is at a depth of about 135 feet from the surface. The uprise shows eight feet of ore on all sides. Since the discovery, it has been necessary to put the mine in shape for working. An ore-chute has been put in, tracks laid in the drift, and in a day or two all will be ready to commence breaking ore in earnest. Over the shaft, a new shaft and engine-house has been built, which in fact is but just completed.

CATALPA.—The Leadville *Democrat* says: A tour through the underground workings of the Catalpa mine reveals considerable fine sand carbonate, especially in the vicinity of the west or lower shaft. The upper and lower shafts are connected, and two connections have also been effected with the Crescent incline. A series of drifts extending from the lower shaft partially blocks off a large tract of territory, through all of which a fine streak of sand, ranging from three inches to three feet, passes seemingly almost unbroken. The upper or eastern workings do not look as well as they did some time ago. The mine employs from 70 to 80 men, and is shipping from 12 to 20 tons of fine ore a day.

HIBERNIA.—The Hibernia is running a drift west, in hope of finding within its territory the same rich ore-body found in the Big Pittsburg and Matchless.

IRON.—This mine is at present producing larger than any mine around Leadville. Mr. Eilers has retired from the management. The Leadville *Herald* says: Ore is raised from both inclines in the Iron, from the Tucson shaft and also from the Rock and Dome properties. The ore, through the largely developed mine, though not of very high grade, is in such quantities, and the arrangements for mining and raising are so complete, that a large profit is realized.

LITTLE PITTSBURG.—For the first three weeks of March, the ore-shipments amounted to 850 tons. This is considerable improvement over past productions. The New Discovery is showing considerable improvement to the north and along the east side. The Dives ground, where the new strike was made, shows only faces of iron in the drifts. Work in sinking is driven on the No. 6 shaft of the New Discovery, which is located across the Dry Stray Horse Gulch and is on Yankee Hill.

ROBERT E. LEE.—According to the Leadville *Herald*, the new shaft, near the office, has reached a depth of 210 feet. A few days ago, the shaft cut a three-foot seam of ore that assays fifty-three ounces to the ton. The south shaft across the gulch is also worked, and is in low-grade mineral. From the main shaft about twenty tons of ore are raised daily. From the dump, also, about the same amount of ore is shipped, making the shipments average about forty tons a day. From the west side of the Lee, there has existed a porphyry dike, extending from the northwest toward the southeast. This for a time seemed to cut off the ore in that direction. Following down the side of the dike, however, the end seems reached and a curve is made in it. Here the ore-body is again widening out and gives promise of showing an ore-body beyond, greater even than the other proved. To the north and east, the ore-body continues as good as ever.

ROBINSON.—We are indebted to the Leadville *Herald* for the following description of this mine and works: The mine is now worked entirely through the great new tunnel which was run in 952 feet before it cut the former incline. A new incline has recently been started from the tunnel, running parallel with the main incline. This has reached a length of 134 feet. Iron tracks extend through all parts of the mine connecting with the tunnel, through which the ore is taken in cars. From the mouth of the tunnel, tracks extend to the roasting-furnaces, smelter, and also to the large new ore-house, which is built beside the railroad track. These tracks extend over high trestle-work, from which ore-chutes are built, so the ore-cars empty into ore-bins or directly into the cars. The smelter is an immense building, having crushing and sampling-rooms above, with a large ore-house, containing about a dozen bins, at the side. The building was originally planned for three large furnaces, but only two have been constructed. These are of 40 tons each daily capacity. But one furnace is at present running, as the blast furnished by one small blower is insufficient. Mr. Ewing states that he will at once build another furnace, and also add other blowers. The engine is a fine one of sixty horse-power. There were yesterday on hand at the works, six car-loads of high-grade bullion, and four more cars have been shipped since the new company took charge. One feature noticed regarding smelting was new to smelting. It is well known that Robinson ore is not as easy to smelt as the lead carbonates of Leadville. To supply, therefore, a greater quantity of lead, quantities of low-grade bullion from Leadville smelters are purchased. These bars are piled over a furnace and heated till melted, when the drippings are allowed to fall into the fire and ashes below. This product is thrown into a vat of water, and then it is used in the furnaces in the place of high-grade lead ores. The roasting-furnaces for the ore are also a novelty in this part of the country. Two immense buildings, each about 100 × 150 feet, have been built for these. In one, four reverberatory furnaces have been built that will roast thirty-two tons of ore a day. In the other building, four more furnaces of similar kind will soon be built, that will handle forty tons a day. Three extensive charcoal buildings have been built back from the smelter, and tracks connect to the furnaces. The ore-house beside the track is a very substantial one, and holds seven hundred tons. As a general thing, ore destined for shipment is dumped through ore-chutes directly into the cars; but in case of a surplus, or if the cars are not ready, the ore-house is used as a storage-room.

SILVER WAVE.—Negotiations have been for some time going on for the purchase of this property by the Silver Cord Company, and the *Herald* states that the Silver Cord combination has made a partial payment for the property of the Silver Wave. The mining editor of the *Democrat* estimates the shipments of the Silver Wave at from 50 to 60 tons of ore per day, averaging about $45 per ton. A tour through the different workings of the mine shows a number of fine ore-breasts. A large amount of development-work is also doing, opening up new ore-reserves. About one hundred men, all told, are employed in the mine.

MONTANA.

We condense the following from the Butte *Miner*:

ALICE.—It is said that ore of an exceedingly rich character is coming up from the 500-foot level. The engine has arrived, and will be speedily placed in position at the winze at the 500-foot level, and used for hoisting purposes. This winze or shaft is sinking to connect the 500-foot level with the 700-foot level; and as soon as the new engine is placed, the work will be rapidly accomplished.

COLUSA.—The work of cutting out stations progresses well. No ore is lifted, on account of the work of station-cutting. The ore goes to the smelter at Meaderville for reduction.

MOULTON.—The 800-foot main three-compartment shaft had been dropped to a depth of 246 feet March 17th, and is fast approaching one third of the distance in depth for which sinking had been contracted for by the company. The bottom of the shaft is in the hardest granite yet met with in sinking; but though unusually hard, fair progress is made in the work. The machinery is arriving daily on the ground, and it is all on the way up from the terminus of the Utah & Northern Railroad, and is expected in a few days.

ORIGINAL.—Work will be begun on the National mine, the property of the Original Butte Mining Company, shortly. A contract to sink a main shaft 300 feet deep has been let, and the size of the shaft will be larger than any other shaft in this district. Portable hoisting-works have been ordered from the East, of sufficient horse-power to sink the shaft to a depth of 1000 feet.

STEVENS.—This mine is rapidly improving, and the changes noticeable within the past week have been of a flattering character. Both levels are driven ahead east and west from the main shaft, and are making fair headway. In both faces, the ore-vein is looking remarkably well. It is a compact and strong vein. Considerable first-class ore is hoisted out daily. The ore is similar in character to the Alice and Anselmo ore, and differs only in carrying a little more pink manganese. The ore coming from the drift-faces of the mine is said to be rich and shows a profusion of native and wire silver.

NEVADA.

EUREKA DISTRICT.

EUREKA CONSOLIDATED.—The Ruby Hill *Mining News* says: Some months ago, a drift was started west on the 1000 level, to explore a territory heretofore considered worthless. The drift attained a length of about 900 feet, when the superintendent of the mine ordered its extension stopped. This order the foreman objected to, informing the superintendent that the header of the drift was then in ground that always contained ore, smalls slips of red lime having begun to make their appearance. He finally overcome the objections of the superintendent, and the drift was again started. Occasionally bunches of good ore were encountered, but nothing of much consequence until about three weeks ago, when the drift ran into high-grade ore. As every one knows, in this district quartzite composes the foot and shale the hanging-wall of our great lode, and heretofore all bonanzas have been found between those two walls. This drift was run just south of the quartzite wall, the purpose being to cross-cut north through the quartzite in the usual old style. But encountering ore south of this wall has surprised every one and has inaugurated a new departure in mining in this district. Where this ore was struck, the drift had attained a length of 1300 feet. Above this point, on the 900 level, the ore was found and sunk upon about 45 feet. In the mean time, a winze was started on the 1000 level in the ore-body, which, at the depth of 35 feet, had to be stopped on account of caving from above. Instead of north, this rich vein was pitching at the regulation angle due south, and, as stated above, south of the foot-wall of the lode. At the bottom of the 1000 level winze, the ore-body is two sets wide and has every appearance of widening out into something immense. Work is now vigorously pushed to secure the ground above, when sinking the winze will be resumed. This is the first time in the history of Eureka District that a genuine body of ore has been encountered to the south of the quartzite wall, and which pitched south instead of north.

PROPOSALS AND SALES.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received:

Erection of a new Brick School Building at Portchester; for particulars address Board of Education, Portchester, N. Y.	
Furnishing Supplies for the Truant House for the current year, in accordance with the specifications on file in the Department of City Works, Commissioner of the Department of City Works, Municipal Department Building, Brooklyn	April 5, 1881.
Furnishing Desks for Class-Rooms in sundry School-houses; plans and Specifications may be seen at the Office of the Superintendent of Repairs, Depot Board of Education, Brooklyn, N. Y.	" 5, "
Performing the Labor and Furnishing the Material necessary to the Erection and Completion of a Family Building, according to the plans and specifications, as changed, now on file in the office of the Trustees of the Girls' Industrial Home; Building Committee, Delaware, O.	" 5, "
Furnishing about 390,000 pounds of Iron Drift Bolts, required for Cribs in the Extension Breakwater at Chicago, Ill. They will be of one-inch round iron, in lengths varying from sixteen (16) to thirty-two (32) inches; G. J. Lydecker, Major of Engineers, U.S.A., 25 Honore Buildings, Chicago, Ill.	" 5, "
Excavating about two and one quarter Million Cubic Yards of Material from the Channel leading to the Harbor at Baltimore; William P. Craighill, Lieutenant-Colonel of Engineers, U. S. Engineer's Office, 70 Saratoga street, Baltimore, Md.	" 7, "
Construction of 3000 Linear Feet of Pile Revetment on the Sides of the Sturgeon Bay Ship-Canal, as per plan and specifications on file; W. T. Casgrain, Chief-Engineer, Sturgeon Bay and L. M. Ship-Canal and Harbor Company, Room 5, No. 12 Wisconsin street, Milwaukee, Wis.	" 7, "
Extending the Second Story of the Building upon Jay street, between Myrtle avenue and Willoughby street, now occupied by the Department of Fire and Buildings; Commissioner of the Department of City Works, Municipal Department Building, Brooklyn	" 7, "
For Grading, Curbing, Guttering, Paving, and Construction of Cross-Walks on East Market street, from the old western boundary of Middlebury Township to the west line of Water street. The entire length of said improvement is in what is now known as the Sixth Ward of Akron City. The work proposed for, including curbing, gutter-stone, corner blocks, paving, and crossings, shall consist of the kind known as Medina sandstone. No proposal will be accepted unless on a blank furnished by the City Civil Engineer, City Clerk's Office, Akron, O.	" 9, "
Building a Sewer through the Village of Hull, according to plans and specifications made by Clement Herschel; Board of Health, Hull, Mass.	" 11, "
Transportation of Military Supplies in the Department of Texas during the fiscal year commencing July 1st, 1881, and ending July 30th, 1882. Blank proposals, form of contract, and printed circulars, stating the estimated quantities of supplies to be transported, and giving full information as to the manner of bidding, conditions to be observed by bidders, and terms of contract and payment, will be furnished on application to the offices of the Quartermasters at Fort Brown, Texas, New Orleans, La., and St. Louis, Mo.; Benjamin C. Card, Chief Quartermaster, San Antonio, Texas.	April 12, 1881.
Furnishing all the Postage-Stamps which the Post-Office Department may require for Public and Official Use during a period of four years, commencing on the 1st day of July, 1881. Blank forms of bids, with full specifications, will be furnished upon application to the Third Assistant Postmaster-General, Washington, D. C.; Thomas L. James, Post-master-General, Post-Office Department, Washington, D. C.	" 27, "
Erection of a Monument to mark the Birthplace of George Washington; Department of State, Washington, D. C.	May 1, "
Monument to be Erected in Rome for late Victor Emanuel II., First King of Italy; President of the Royal Commission, Cairoli, and the Secretary of the Royal Commission, etc., Rome, Italy	Sept. 21, "

Denver & New Orleans Railroad.—This company has ordered fifty miles of steel rails to be manufactured and shipped from Liverpool as soon as possible. They also closed a contract with a construction company for building the entire line from Denver to its connection with the Texas railroads in Northwestern Texas. Surveying parties have been out for two weeks. At the last meeting, the board of directors ordered advertisements for bids for grading, tying, and bridging the section from Denver to Arkansas River.

New York & St. Louis Railroad.—An advertisement on Saturday in Cleveland, O., for proposals for constructing 20,000 cubic yards of masonry, culverts, viaducts, bridges, etc., is a tangible move by the New York, Chicago & St. Louis Railroad Company toward the construction of the new road. A Painesville (O.) dispatch says that the survey through Northern Ohio has been completed, and the right of way is being secured through the northeastern counties. The bridges are to be of iron, and the road laid with 60-pound steel rails, of which 40,000 tons are said to have been already purchased.

Pier at Atlantic City.—It is reported that a company has been organized for the purpose of building a pier at Atlantic City. It is contemplated to build one of the most complete arrangements of the kind in the world. It will extend into the sea 560 feet beyond high-water mark, with a steamboat landing extension sufficient to obtain a low-water depth of about 14 feet. An iron pavilion, 200 feet in diameter, with a capacity of 10,000 people, will be erected on the shore end. Necessary ground has been secured, and every thing is ready to begin the work.

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the nature and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates. All assays are made with the utmost care by the most experienced and competent assayers:

Assay for gold.....$3.50	Assay for copper. $3.00	Assay for iron.....$4.00
" silver..... 3.00	" lead (wet)... 3 00	" nickel and
" gold and silver 5.00	" zinc..... 5.00	cobalt 10.00

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

Communications, samples, etc., to be addressed to
ENGINEERING AND MINING JOURNAL, 27 Park Place, New York
(P.O. Box 4404).

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, April 1.

The week closes upon a large and well-distributed business in the transactions upon this market. The bulk of the business, of course, was absorbed by the New York Mining Stock Exchange, and we are reported quite an accession from the American Exchange members to the old Board. We note, elsewhere, a modification in the rates of commission for selling stocks, and we are also informed that the members of the Exchange will be held to a strict accountability for any violation of these rates.

Amie has not been as active as usual, and has been a trifle weak; the sales amount to 19,100 shares at 51@47c. Argenta records sales of but 100 shares at 30c. Belle Isle was quiet and weak, with sales of 755 shares at 55@50c. Breece has been dealt in to the extent of 400 shares at $1.60@$1.55. California has had a fair business at prices stronger than at the beginning of the week; the sales aggregate 9090 shares at 95c.@$1.45. Chrysolite has been quiet and weak, the sales aggregating 10,250 shares at $6.75@$6@$6.25. Climax has been very quiet and a little weak; the sales amount to 2800 shares at 63@59c. Consolidated Virginia has been moderately dealt in at stronger prices, the sales amounting to 13,965 shares at $1.60@$2.25. Copper Knob has been dealt in to the extent of 20,000 shares at 5c. Dunkin has been active and weak, with sales of 17,900 shares at $1.60@$1.20@$1.50. Eureka, with sales of 390 shares, has been strong at $24¼@$26¼. Excelsior has been weak, with sales of 200 shares at $5.50@$5. The sales of Findley aggregated 5300 shares at 30@32c. Father de Smet only records sales of 5 shares at $11, and Gold Stripe 400 shares at $3.05@$3. Grand Prize, owing to an assessment of forty cents a share, was very weak; the sales amounted to 1235 shares at 80@40c. Great Eastern has been active and weak, the sales amounting to 31,200 at 28@24c. Green Mountain has been quiet and strong, with sales of 500 shares at $6.25@$6.50. It does seem as if Hibernia would command the attention of the whole mining market. With "wash" sales, manipulations, "deals," etc., sales ran up to the enormous sum of 230,780 shares. The price was very irregular and inclined to weakness, starting out at 97c., going to $1 and back again to 93c. Homestake only records 50 shares at $27½. Horn-Silver has been irregular, with sales of 1981 shares at $9@$10. Hukill has been quiet and weak, the sales aggregating 11,950 shares at $1.25@93c. Independence has been quiet and strong, with sales of 1300 shares at 32@36c. Leadville has been very active, irregular, and strong; the sales amount to 44,191 shares at 94c.@$1.20. Little Chief has been active and weak, the sales amounting to 16,850 shares at $1.35@$1@$1.10. Little Pittsburg has been quiet and about steady, the sales aggregating 12,000 shares at $3.60@$3.45. Moose has been active and steady, the sales amounting to 19,300 shares at $1.60@$1.50. Navajo has been very active and weak, with sales of 19,950 shares at $2.35@$1.40. North Belle Isle records sales of 600 shares at 30c.; Ontario, 12 shares at $36; and Northern Belle, 600 shares at $14.75@$14@$14.63. Rising Sun has been quiet and a little weak, the sales aggregating 2200 shares at $3.10@$3. Robinson Consolidated has been more active than usual, but has been a trifle weak; the sales amount to 3350 shares at $9@$8.75. Sierra Nevada, with sales of 230 shares, has been irregular but strong ranging between $6.75@$8. Silver King has been quiet and weak, the sales amounting to 325 shares at $23.13@$22. The sales of Spring Valley amount to 100 shares at $3. Standard has been quiet and very irregular; the sales aggregate 1915 shares at $25½@$26½@$24¾. Starr-Grove records sales of 500 shares at $6.13@$6.25. Stormont has been dealt in to the extent of 1600 shares at $2.25@$2. Cedar Tree, which made its appearance on Wednesday for the first time in this market, was dealt in to the extent of 1900 shares at $2.25@$2.15.

The sales of Alta-Montana amount to 300 shares at $2.15. American Flag, with sales of 6500 shares, has been steady at 30@28c. Barcelona has been quiet and weak, the sales aggregating 2000 shares at $1.30@$1.10. Bechtel has been dealt in to the extent of 500 shares at 60c. Big Pittsburg has been fairly dealt in at strong prices; the sales amount to 6400 shares at $3.90@$3.25. Black Jack records sales of 5300 shares at $1.45@$1.20. Bonanza Chief has been dealt in to the extent of 1600 shares at 28@30c. Boston Consolidated has been active and weak the sales amounting to 26,240 shares at 66@47c. Boulder Consolidated has had a moderate business at irregular prices; the sales aggregate 4100 shares at 80@87@80c. Buckeye has been quiet and a little weak, the sales amounting to 6500 shares at 19@16c. Bull-Domingo has been liberally dealt in at very weak prices; the sales amount to 5575 shares at $2.70@$2.15. Bulwer has been dealt in to the extent of 430 shares at $2@$2.05. Calaveras records sales of 6200 shares at 21@20c., and Caledonia, B.H., 100 shares at $1.60. Catskill has been quiet and strong, with sales of 1150 shares at $6.38@$6.75@$6.50. Central Arizona has been steady, with sales of 700 shares at $5. Cherokee has had a moderate business at fairly steady prices, the sales aggregating 3000 shares at $2.05@$2. Cheyenne has been active and quite weak, the sales amounting to 10,200 shares at $1@77c. Consolidated Imperial has ranged between 10@17@15c. with sales of 5500 shares. Consolidated Pacific has been moderately dealt in at irregular prices; the sales amount to 3230 shares at 70@82@78c. Crowell records sales of 500 shares at 5c.; and Cosette 1000 shares at $1.30@$1.25. Dahlonega has been dealt in to the extent of 3400 shares at 7@8c. Dunderberg has been quiet and very irregular, with sales of 4300 shares at 80@50@63c, Durango has been quiet and steady, the sales aggregating 3000 shares at 16@15c. Glass-Pendery has had an active business at very irregular prices; the sales aggregate 14,600 shares at $1.75@$2.20@$1.95. The sales of Gold Placer amount to 200 shares at 40c. Goodshaw has been dealt in to the extent of 2700 shares at 82@78c. Granville records sales of 6300 shares at 5@4c. Hortense has had a fair business at irregular prices; the sales amount to 4900 shares at 60@67@64c. Iron Silver records sales of 1700 shares at $3.70@$3.75. Lacrosse has been dealt in to the extent of 5500 shares at 38@29c. Legal Tender has been moderately active and quite strong, the sales amounting to 7400 shares at $2.50@$2.90. Lucerne has been very active and a little weak, the sales aggregating 20,700 shares at 16@11c. Mariposa Preferred has been quiet and strong, with sales of 800 shares at $5@$6.50@$5.25. Mariposa Common has been active and very irregular; the sales aggregate 4510 shares at $4.25@$3@$4. May Belle has been dealt in to the extent of 100 shares at 11c., and Mayflower 2100 shares at 40c. Mineral Creek has been active and irregular, the sales aggregating 29,400 shares at 78@66@71c. Miner Boy has had a liberal business at strong prices; the sales amount to 12,300 shares at $1.60@$1.75@$1.65. Moose Silver records sales of 200 shares at $1.75. North Standard has been exceedingly

active and weak, the sales amounting to 47,230 shares at 29@17c. The Quicksilver stock has been quite active and strong. Preferred records sales of 6600 shares at $61@$65¼, and Common, 800 shares at $13@$16. Rappahannock has been dealt in to the extent of 1300 shares at 14@13c. Red Elephant records sales of 900 shares at 28@23c. Silver Cliff has been moderately active at irregular prices; the sales amount to 3950 shares at $4.50@$4.80@$4.60. Silver Nugget has had a very active business at strong prices; the sales aggregate 97,200 shares at 20@28c. Silver Nugget new stock has also been very active at irregular but about steady prices; the sales amount to 18,550 shares at 51@56c. South Bulwer has been dealt in to the extent of 400 shares at 30@28c. South Hite records sales of 400 shares at 35c., and the new stock 100 shares at 65c. Sutro Tunnel has been fairly dealt in at irregular prices; the sales amount to 7050 shares at $1.75@$1.50@$1.63. Tuscarora, with sales of 9800 shares, has been weak, ranging between 21@13c. Unadilla was a little weak at 15@13c., with a business of 5400 shares. Vandewater has been quite active at very irregular prices; the sales aggregate 23,600 shares at 45@60@50c. Willshire has been quiet and weak, with sales of 3700 shares at $1.60@$1.40. Dardanelles, which makes its first appearance on this market, has had a fair business at irregular but strong prices; the sales amount to 3700 shares at $6.50@$7.38@$7.50. Allouez records sales of but 100 shares at $3; and Kossuth 200 shares at 10c. Consolidated Pay Rock has been dealt in to the extent of 2500 shares at $1.65@$1.50; and Noonday 50 shares at $2.

UNLISTED QUOTATIONS.

Mr. L. V. Deforeest, No. 70 Broadway, under date of April 1st, 3 P.M., reports the current quotations of unlisted stocks as follows:

	Bid.	Offer'd		Bid.	Offer'd
Barcelona.....	$1.10	1.15	O. K. & Winnebago.....	....	$1.00
Breece..... ...	1.45	1.60	Patagonia.....	....	.75
Bald Mountain.	.07	.08	Plata Verde.....	....	2.50
Carbonate Hill.	.15	.20	Rico.....	....	.35
Con. Arizona..	....	1.25	Rocker.....	.25	.35
Empire of Cal.	....	1.75	Sacramento.....	....	1.00
Empire, Utah..	2.00	3.00	Santa Cruz.....	....	.75
Freeland.....	2.75	3.50	Sir Rodr'k Dhu.	.15	.25
Glass-Pendery..	2.05	2.25	Stormont.. . .	2.00	2.25
Grand View.....	....	.65	Silver Nugget...	.51	.55
Highland Chief	4.00	8.00	State Line, Nos. 1 and 4.....	1.00	1.25
Julian.....	.50	1.50	State Line, Nos. 2 and 3.	4.00	4.25
Lowland Chief.	.25	....	Trinity.....	....	1.75
Mack Morris...	....	4.00	Vandewater G..	.50	.51
May Flower. ..	....	.40			
Native Silver...	....	.50			
New Philadel...	....	.75			
North Hite.....	....	.75			

The stockholders of the Navajo Company have elected a new board of directors.

The Philadelphia Board of Brokers will begin dealing in mining stocks next week. The mining stocks will be registered free of charge.

It is said that the differences between the Leadville Consolidated Mining Company and the Little Giant claim have been settled by the conveyance of three quarters of the latter's claim to the former company.

A suit has been brought against the Chrysolite Mining Company by Governor Tabor, who has purchased the claim, for alleged legal services performed by Henry C. Gardiner under the administration of Ex-Manager W. S. Keyes. The defense is, that there were no services performed.

At a meeting of the stockholders of the Stormont Silver Mining Company, held on Thursday afternoon, the capital stock was increased from $150,000 to $200,000, the par value to be $1 per share. The vote was unanimous in favor of the proposition, and the new stock was taken up at $2 a share, which will pay all indebtedness and leave $30,000 in the treasury.

It is said that the Tombstone District, A. T., is yielding more bullion than the Comstock lode. There are already two dividend-paying mines there, one of which is disbursing $60,000 per month, and the other is disbursing $75,000 per month. Both mines are likely to continue these disbursements for some time. Other mines in the same district give promise of soon becoming dividend-paying properties.

At a meeting of the Governing Committee of the New York Mining Stock Exchange, to-day, the following rates of commission were established: On stocks selling at less than 50c. per share, 50c. per hundred shares; 50c. and under $1, $1 per 100 shares; $1 and under $2, $2 per 100 shares; $2 and under $5, $3 per 100 shares; $5 and under $10, $5 per 100 shares; $10 and under $20, $6¼ per 100 shares; $20 and upward, $12½ per 100 shares.

It is reported from Denver that the order of the United States Court, issued on March 19th, in the case of the Robinson mine suit, was the result of a compromise between the parties to the suit, which permits the Robinson Company to take ore from the Smuggler claim, but requires it to pay half the gross proceeds into court to abide the issue of the suit. It is understood in Denver that Jacque has disposed of all of his interest, Governor Tabor being named as part owner, with others, of Jacque's claim, the consideration having been $25,000 cash, without condition; $75,000 more to be paid to Jacque, if he wins the suit.

The Consolidated Pay Rock Mining Company is capitalized at $2,500,000, of 250,000 shares at $10 each. The properties consist of the Hopewell lode, 700 feet; the Pay Rock lode, 1400 feet; the Silver Point lode, 1500 feet; the Katahdin lode, 1500 feet; the Santry lode, 1500 feet; the Broderick lode, 1500 feet; the Monte del Rey lode, 1500 feet; the Sydney Myers lode, 1500 feet; and the Zouave lode, 1500 feet; being a total of 12,600 feet of lodes, together with the Hopewell, Pay Rock, Silver Bank, and Eagan tunnels, the Silver Crown tunnel site, and a mill-site, of 4¾ acres adjoining. These are all located on the southwesterly slope of Republican Mountain, Griffith Mining District, Clear Creek County, Colorado. It is now quoted at the New York Mining Stock Exchange.

The *Indicator* of March 31st says:

Here are some first-class frauds in the shape of mining companies, organized and put on the Philadelphia and New York markets by one Major J. W. Bonta, erstwhile of the above cities and Leadville: Eagle Smelting and Silver Mining Company, the Silver Glance Consolidated Company, Sulphurets Company, First National Silver Mining Company, and the Del Monte of the Gold Medal swindle. Any body who has invested money in the stocks of the above companies can consider they are just that much out of pocket. Taking that view of it, which is the correct one to a dead moral certainty, will settle their minds and expectations, so that they need have no further trouble about it, unless to sue somebody for getting money under false pretenses. Bonta is the man that launched the Scooper swindle on Philadelphia, which the old original admits was salted with his knowledge, in order to effect the sale at enormous figures.

OFFICIAL LETTERS.

Alta-Montana.—The superintendent telegraphs that the thirty-ton smelter and the amalgamator were running satisfactorily, and that the Comet mine is proving a bonanza, an important strike having been made in the main tunnel.

Big Pittsburg.—The superintendent telegraphs:

Large quantity of water coming into Lent shaft; think I shall have to put machinery on and sink by our own employés instead of by contract. Twenty-five tons sorted down to sixteen and shipped; lot will net not less than $7500. Drift from west rise does not show pay yet. Have not broken much ore in northeast rise; making of ore-chute, tracking of drifts, etc., have taken more time than anticipated.

Boulder Consolidated.—The superintendent, under date of March 28th, says:

Ore in face of west drift, lower level, is 3 feet wide, and will mill from $40 to $60 per ton. It is improving daily. The mill will start, probably, on April 10th.

Caledonia.—With additional water facilities, the superintendent advises an increase in the number of stamps to 100. A change in the location of the ore-house would diminish expenses probably $500 per month, which is also suggested. The discovery ledge, the smaller of the two veins, on the lower tunnel level, where last worked, is 80 feet wide, without reaching either foot or hanging-wall. The open cut is at present about 100 feet wide, and there are no signs of a hanging-wall.

Dahlonega.—The superintendent reports that the ditch is delivering water all right, and that the receipts at the end of the month will exceed $800. Three companies are now receiving water, and a fourth will soon be ready to take all that can be furnished. Surveys are running to extend the ditch to other streams, and it is believed that water enough will soon be sold to increase the income from this source to $50 per day.

Dunderberg.—The superintendent reports that the stopes on No. 4 level are producing a large amount of ore. In the drift, there is a body of almost solid ore from 6 to 8 inches wide. A sample from the north branch drift gave 158 ounces of silver. In the No. 2 stope, level No. 1, there is a 5-inch streak of almost solid mineral.

Gold Stripe.—The superintendent reports the Kerr tunnel nearing the vein, which will soon place large additional reserves of ore in condition to be worked. The Lawrence tunnel formation indicates a near approach to the vein, and the No. 2 main tunnel, that is now heading for this ore-body, is making good headway, the rock being quite hard, and will cut the ledge 200 feet deep. Late telegraphic reports give information of a rich strike in the mine of a body of sulphuret ore. The works run steadily, and an abundance of ore in the dumps.

Great Eastern.—A telegram from the superintendent says:

Mill running full capacity on Flora Belle ore. Ore-body looking well.

Green Mountain.—The superintendent reports:

The No. 5 tunnel in the ore-body about 200 feet, and still running through excellent ore, the quality averaging the same as the mills are now running on. This ore-body is of immense size. The tunnel is running through the center of it. A cross-drift has been started both east and west from the tunnel, and it will take fifteen days to reach the walls. The veins from which the ores now worked are taken continue strong and of large size. The usual quantity is milled, and a large accumulation of broken ore is in the mine chutes.

Rising Sun.—The superintendent reports that the development ordered by the company is rapidly pushed forward. The officers state that there is a large amount of money now in the treasury to pay for doing this work, which, when completed, is expected to open a body of ore that will greatly increase the value of the mine. Several winzes have been sunk connecting the various levels down to a depth of 900 feet. The ore exposed looks exceedingly well, and the latest developments show that the ore-body is improving. The mill loses no running time, and the clean-ups are satisfactory.

Silver King (Colo.).—The general manager telegraphs from Montezuma:

The ore-house has been completed, and is stored full of ore. The ore assays from 50 to 8000 ounces to the ton. The A tunnel is in 68 feet, the B tunnel 228 feet, and the C tunnel 285 feet. An uprise has been started to connect the B and C tunnels.

Standard Consolidated.—The superintendent reports, under date of March 21st, that the east cross-cut from the 1000 level of vertical shaft is now in 170 feet. The west cross-cut is in 115 feet, with very good formation in face. The total length of main east cross-cut, 700 level, is 560 feet; face in very hard rock. The south drift from east cross-cut, 500 level, is in 150 feet, showing the ledge 4½ feet wide. Uprise No. 6, 385 level, north drift, is up 165 feet, with vein at the top 12 feet wide. Uprise No. 1, south drift, is up 163 feet, showing the ledge 15 feet wide. On the 550 level, the ledge is 20 feet wide; and on the 385 level, north, the ledge is from 12 to 20 feet wide. The stopes in the south end of the 385 level show the ledge from 6 to 10 feet.

Sterling Price.—Recent advices announce the discovery of a solid body of mineral in the tunnel on the Sterling Price, the whole width of the tunnel six feet wide and as many feet deep at the bottom. Sinking will be commenced through this solid ore-body, which has proved to be a true fissure, similar to the 6-foot vein in the shaft. Developments on the South Virginia and Johnny Bull mines adjoining on the same lode are also showing them to be rich and large ore-bodies. A mill-run test of ores from these properties, made at Hill's works in Denver, has proved them to be valuable properties. There are at present 150 tons of ore on the Sterling Price dump.

DIVIDENDS.

The Glass-Pendery Consolidated Company has declared a dividend of $25,000, or 10 cents per share, payable April 8th. Books close April 4th, and reopen April 11th.

The Tombstone Mill and Mining Company yesterday declared its thirteenth regular monthly dividend of $50,000, or 10 cents per share, payable April 15th. Transfer-books will be closed from 10th to 15th inclusive.

The Cedar Tree Mining Company, of Pioneer District, Pinal County, Arizona, has declared a dividend of 5 cents per share.

The Union Mining Company of Alleghany County, Md., has declared a dividend of 2½ per cent, payable April 15th.

GENERAL MINING STOCKS.

Dividend-Paying Mines.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	SHARES. Par Val	ASSESSMENTS. Total levied to date.	ASSESSMENTS. Date and amount per share of last.			DIVIDENDS. Total paid to date.	DIVIDENDS. Last Dividend.			HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. March 26. H.	March 26. L.	March 28. H.	March 28. L.	March 29. H.	March 29. L.	March 30. H.	March 30. L.	March 31. H.	March 31. L.	April 1. H.	April 1. L.	SALES.
Alice	Mon			460,000						40,000	Mar.	1880	10												
Amie Con. s. L	Col.		5,000,000	500,000	10	*				305,000	May.	1880	10	.50	.49	.51	.49	.50	.49	.50	.46	.48	.47	.47		19,100
Argenta, s	Nev	1,500	10,000,000	100,000	100	130,000	Mar..	1881	20	40,000	Feb	1880	20			.30										100
Barbee & Walker	Ut'h		1,000,000	100,000	10	*				60,000	Nov.	1880	10													
Bassick, G. S	Col.		10,000,000	100,000	100	*				25,000	Feb..	1880	25											11 06		200
Belle Isle, s	Nev.	1,500	10,000,000	100,000	100	30,000	Feb.	1880	50	340,000	Dec.	1879	25	.54								.55	.50	.50		755
Belcher, G. S	Nev.	1,040	10,400,000	104,000	100	2,250,000	Feb.	1881	50	15,397,200	Apr.	1876	75													
Bodie Cons., G	Cal.		10,000,000	100,000	100	75,000	May.	1879	1 00	1,200,000	Mar.	1880	25													
Breece	Col.		5,000,000	200,000	25	*				2,000	Feb.	1880		1.60	1.55											400
California, G. S	Nev.	600	54,000,000	540,000	100					31,320,000	Dec.	1879	50	.95		1.05	.94	1.00	.97	1.10	1.00	1.20	1.05	1.15	1.25	9,090
Calumet & Hecla, C	Mch		2,500,000	100,000	25	200,000				18,250,000	Feb.	1880	5 00													
Caribou Con., G	Col.	1,400	1,400,000	100,000	10	*				50,000	Mar	1880	10													
Chrysolite, S. L	Col.		10,000,000	200,000	50	*				1,100,000	Apr.	1880	50	6.75	6.25	6 75	6.13	6.38	6.00	6.25	6 13	6 25	6.13	6.25	6.13	10,250
Climax, S. L	Col.		2,000,000	200,000	10	*				180,000	Aug.	1880	30	.63	.61	.62		.65	.61	.61	.60	.59		.60	.59	2,800
Cons. Virginia, G. S	Nev.	710	54,000,000	540,000	100	411,200	June	1873	3 00	42,930,300	Aug.	1880	50	1.65	1.60	1.75	1.65	1.80	1.70	1.85	1.75	2 00	1.85	2.25	2.00	13,265
Copper Knob	N.C.		1,000,000	1,000,000	1	*				15,000	Nov.	1880	02			.05		.05		.05		.05		.05		20,000
Crown Point, G. S	Nev.	600	10,000,000	100,000	100	2,523,370	Dec.	1880	0 50	11,588 000	Jan..	1875	2 00													
Deadwood Terra G	Dak		5,000,000	200,000	25					†200,000	Mar.	1881	25													
Dunkin	Col.		5,000,000	200,000	25	*				145,212	Mar.	1881	12½	1.60	1 55	1.60		1.60	1.20	1.55	1.40	1 55	1.45	1 60	1.50	17,000
Eureka Cons., G. S. L	Nev.		5,000,000	50,000	100	100,000	May.	1876	1 00	4,580,000	Mar..	1881	50	24.75	24.25	24¼		25.00						26¼	25.50	390
Excelsior W'k'r & M. Co	Cal.	525 acres	10,000,000	100,000	100					850,000	Sept.	1880	25	5.50				5.00								200
Father de Smet, G	Dak		10,000,000	100,000	100					29 000	Mar.	1881	25			11.00										5
Findley, G	Geo.		200,000	200,000	1	*				8,000	May.	1879	1c	.31	.30	.31				.31		.32		.31		5,300
Freeland	Col.		5,000,000	200,000	25	*				50,000	May.	188	22													
Glass Pendery	Col.		5,000,000	250,000	20					25,000	Apr..	1881	10													
Gold Stripe	Cal.		1,500,000	150,000	10					67,500	Mar..	1881	15			3.05								3.00		400
Gould & Curry, G. S	Nev.	612	10,800,000	108,000	100	3,260,000	Feb .	1881	50	3,826,800	Oct.	1870	10 00													
Grand Prize, S	Nev.	1,500	10,000,000	100,000	100	265,000	Mar..	1881	40	450,000	Sept.	1880	0 25	.80	.75					.75		.40				1,235
Great Eastern, G	Dak	1,200	1,200,000	300,000	1	*				16,000	July.	1880	01	.28	.27	.28	.26	.28	.27	.28	.26	.27	.25	.25	.24	31,200
Green Mountain, G	Cal.	4,350	1,250,000	125,000	10	*				137,500	Mar..	1881	05	6.25				6.50				6.50				500
Hale & Norcross, G. S	Nev.	400	11,200,000	112,000	100	3,586,000	Mar .	1881	50	1,598,000	Apr.	1871	5 00													
Hibernia	Col.		7.500,000	300,000	25					90,000	Feb .	1881	10	.97	.94	1.00	.92	.97	.93	.97	.92	.99	.93	1.05	.93	230,780
Homestake, G	Dak		10,000,000	100,000	100	200,000	Apr.	1878	1 00	930,000	Mar..	1881	30							27½						50
Horn-Silver, S. L	Uth.		10,000,000	400,000	25	*				200,000	Jan..	1880	25	9.00		9.50	9.00	9.88	9.25	9.50	9.25	10.00	9.00	10.00		1,981
Hukill, G. S	Col.	3,288	1,000,000	200,000	5	*				210,000	Dec..	1878	10	1.20		1.30		1.20	1.15	1.20		1.20	1.10	1.25	.93	11,950
Independence, S	Nev.	1,500	10,000,000	100,000	100	135,000	Apr..	1880	0 25	225,000	Sept.	1879	25	.36	.32			.36	.34							1,300
Indian Queen	Nev.		250,000	125,000	2					250,000	Mar.	1881	4													
La Plata, S	Col.		2,000,000	200,000	10	*				285,000	Mar..	1881	7½													
Leadville Cons., S. L	Col.		2,000,000	200,000	10	*				150,000	Jan.	1880	15	1.10	.94	1.15	1.05	1.20	1.05	1.20	1.15	1.20	1.05	1.20	1.05	44,191
Leeds, S	Uth.	3,000	6,000,000	60,000	100	30,000	Feb .	1881	15	78,000	Oct..	1878	15													
Leopard, L. G. S	Nev.	1,500	5,000,000	50,000	100	372,500	Apr..	1880	10	162,500	Dec.	1876	50													
Little Chief, S. L	Col.		10,000,000	200,000	50	*				700,000	Aug.	1880	50	1.35	1.25	1.30	1.25	1.25	1.20	1.25	1.05	1.20	1.00	1.10		16,850
Little Pittsburg, S. L	Col.	30 acres.	20,000,000	200,000	100	*				1,350,000	Mar..	1880	50			3.60	3.50	3.55		3.45		3.50				1,250
Martin White, S	Nev.	22,900	10,000,000	100,000	100	825,000	Dec..	1880	25	90,000	July.	1879	50													
Moose, S	Col.	39,000	2,000,000	200,000	10	*				550,000	Mar.	1878	25	1.55	1.50	1.60	1.55	1.55	1.50	1.60	1.50	1 55	1.50	1.60	1.55	19,300
Navajo	Nev.	500	10,000,000	100,000	100	175,000	Dec.	1880	0 20	25,000	Mar.	1881	25	2.10	1.90	2.35	2.00	2.20	1.45	1.80	1.40	1.75	1.45	1.50	1.40	19,950
N. Y. & Colorado, G	Col.		1,000,000	50,000	20	*				25,000	July.	1879	10													
Northern Belle, S	Nev.	1,600	5,000,000	50,000	100					1,775,000	Mar..	1881	50							14.75	14.00			14.63		60
North Belle Isle	Nev.	1,500	10,000,000	100,000	100	25,000	Feb..	1880	15	15,000	Sept.	1880	15					.30						.33		600
Ontario, S	Uth.	3,000	10,000,000	100,000	100					3,250,000	Mar.	1881	50					36.00								12
Ophir, G. S	Nev.	675	10,080,000	100,800	100	3,092,600	Mar .	1881	1 00	1,662,200	Jan..	1880	1 00													
Ore Knob, C	N. C.	1,600 acs.	1,500,000	150,000	10	*				173,300	Sept.	1880	25													
Plumas, G	Cal.		1,000,000	100,000	10	715,000				151,000	July	1879	8													
Raymond & Ely, G. S	Nev.	5,000	12,000,000	120,000	100	955,000	Aug.	1880	2 00	3,075,000	Sept.	1873	3 00													
Rising Sun	Cal		750,000	150,000	5	*				90,000	Feb .	1881	15	3.10	3.05	3.10	3.05	3.10						3.00		2,200
Robinson Cons	Col.		10,000,000	200,000	50	*				175,000	Sept.	1880	50	8.75		8.88	8.75	9.00	8.88	9.00	8.88	8.88	8.75	8.75		3,250
Sierra Nevada, G. S	Nev.		10,000,000	100,000	100	4,450,000	Jan .	1881	1 00	102,000	Jan.	1871	1 00	6.75				8.00	7.75							230
Silver King, S	Ariz		10,000,000	100,000	100					575,000	Mar.	1881	2			23.00		23.13		22.25	22 00					325
Spring Valley	Cal.	3,650	200,000	200,000	1	*				50,000	Jan.	1881	05	3.00												100
Standard	Cal.	1,500	10,000,000	100,000	100	50,000	July	1878	1 00	2,550,000	Mar.	1881	75	25½		25½	25½	25¼	24¼	24¾	24⅜	25⅛	24⅞	28½	24⅜	1,915
Starr-Grove, S	Nev.		2,000,000	200,000	10					80,000	Feb..	1881	10			6.13						6.00		6.25		500
Stormont, S	Uth.		150,000	150,000	1	*				135,000	Nov.	1880	30	2.25	2.00	2.13								2.00		1,600
Tombstone, S	Ariz		12,000,000	500,000	25	*				650,000	Apr.	1881	10													
Yellow Jacket, G. S	Nev.	1,200	12,000,000	120,000	100	3,978,000	Oct..	1880	1 00	2,184,000	Aug.	1871	2 50													

Non-Dividend-Paying Mines.

Alta-Montana	Mon		5,000,000	500,000	10	*								2.15		2.15		2.15								300
Am. Flag, S	Col	5,300	1,250,000	125,000	10	*								30c		29c	28c	30c	28c	30c	28c	29c	28c	30c	28c	6,500
Bad Mountain	Colo		10,000,000	1,000,000	10	*																				
Farcelona	Nev		5,000,000	200,000	25																					
Bechtel Con., G	Cal.		10,000,000	100,000	100	162,750	Dec.	1880	0 15					60c		60c						60c				500
Best & Belcher, G. S	Nev.	545	10,080,000	100,800	100	992,990	Dec.	1880	50															8.00		10
Big Pittsburg	Col.				100									3 10	3.00	3.00	2.90	3.00		3.10	3.00	3.20	3.05	3.25	3.20	6,400
Black Jack	Cal.		2,500,000	100,000	2½															1.45	1.20					5,500
Bonanza Chief	Mon		1,000,000	1,000,000	1	*								35c		3 c		30c	28c	3 c						1,600
Boston Con, G	Cal.		1,000,000	100,000	100									68c	64c	65c	58c	60c	54c	58c	52c	55c	49c	51c	47c	26,240
Boulder Con	Colo		2,000,000	200,000	10									85c	80c	85c		87c	82c	89c	87c	85c	81c			4,110
Buckeye	Col.		2,000,000	100,000	5	*								18c				19c	18c	19c	17c	17c		17c	16c	6,500
Bull-Domingo	Colo		10,000,000	200,000	50	*								2.70	2.65	2.65	2.55	2.65	2.40	2.50	2.45	2.50	2.25	2.30	2.15	5,575
Bullion, G. S	Nev.	943½	10,000,000	100,000	100	452,000	Feb..	1881	1 00																	
Bulwer, G	Cal.		10,000,000	100,000	100	36,000	Dec..	1877	50																	
Bye and Bye	Ariz		1,000,000	100,000	10	*								2.10		2.10		2.00				2.00		2.05		430
Calaveras, G	Cal.	2,200 acrs	500,000	500,000	1	*								21c		21c		21c		21c		21c	20c			
Cal., B. H., G	Dak.		10,000,000	100,000	100	375,000	Oct.	1880	0 50							1.60										6,200
Carbonate Hill	Col.		2,000,000	200,000	10																					100
Catskill	Nev.		1,500,000	30,000	5	*								6.38		6.38		6.38		6.75	6.50			6.50		1,150
Central Arizona, S	Ariz		10,000,000	100,000	100											5.00						5.00				700
Cherokee, G	Cal.		1,500,000	150,000	10									2.05		2.0		2.00		2.15	2.00	2.1				3,100
Cheyenne	Dak.		1,000,000	200,000	5									1.00	98c	98c	95c	97c	95c	94c	85c	89c	80c	81c	77c	10,200
Colorado Central	Col.		3,000,000	300,000	10																					
Columbia Con., G. S	Nev		5,000,000	100,000	50																					
Cons. Imperial, G. S	Nev.	468	50,000,000	500,000	100	1,325,000	Jan.	1881	0 10					11c	10c	17c	15c	14c		16c		15c		15c		5,500
Con. Pacific, G	Cal.	1,400	6,000,000	60,000	100	90,000	July.	1880	0 50					80c	77c	80c	75c	78c	70c	8 c	8 c	80c	78c			3,250
Con. Pay Rock																		1.50		1.65	1.60	1.65		1.60	1.58	2,500
Crowell	N. C.		500,000	500,000	1	*														5c						500
Cunlonega, G	Ga.		250,000	250,000	1	*												8c	7c	8c	7c			8c		3,400
Dardanelles														6 50		7.00	6.88	7.00		7 25	7.13	7.38	7.13	7.00	7 38	3,700
Dunderberg	Colo		1,000,000	150,000	10	*								80c	78c					8 c	8 c	80c	78c			4,300
Durango	Dak.		500,000	500,000	1	*								16c				16c	15c	15c						3,000
Empire	Ut'h																							2.00		100
Girard	Ariz																									
Glynn Dale Con. G	Cal.		10,000,000	100,000	100	75,000	Jan..	1881	0 25																	
Gold Placer, G	Col.		5,000,000	200,000	25	*												40c						40c		200
Goodshaw, G	Cal.		10,000,000	100,000	100	145,000	Feb..	1881	15					80c		82c	80c	80c				80c		79c	78c	2,700
Granville, G	N. C	1,231 acs.	300,000	300,000	1	*								8c	4c	5c	4c			4c		4c		4c		6,200
Harshaw	Ariz		10,000,000	100,000	100																					
Head Center																										
Hortense	Col.		2,000,000	200,000	10									65c	64c	65c	60c	67c	64c					64c		4,900
Iron Silver	Colo		10,000,000	500,000	20	*														3.75	3.50			3.75		1,700
Lacrosse	Col.	3,900	1,000,000	100,000	10	*										29c	28c			29c	28c	29c	28c	28c		5,500
Legal Tender	Col.													2.50				2.65	2.50	2.75	2.60	2.80	2.70	2.9	2.80	7,400
Leviathan	Nev	2,000	10,000,000	100,000	100	325,000	July.	1880	15																	
Lucerne	Col.	4,200	5,000,000	500,000	10	*								16c	14c	16c	14c	16c	15c	15c	14c			14c	11c	20,700
Mariposa preferred	Cal.	14,387	5,000,000	50,000	100	1,425,000	Dec.	1880								5.00		5.03	5.50			6.50		5 25		800
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	Dec..	1880						4.25		4.25	4.00	4.0	3.50	4.0	3.0	4.50	4.00	4.25	4.0	4,510
May Belle, G	Cal.	1,500	10,000,000	100,000	100	66,000	Mar.	1881	0 10									11c								100
Mayflower	Colo		1,000,000	100,000	100	*												40c				4 c		40c		2,100
Mexican, G. S	Nev.	600	10,080,000	100,800	100	1,488,200	Jan..	1881	0 50																	
Mineral Creek	Ariz		2,000,000	200,000	10									78c	68c	75c	70c	75c	68c	74c	66c	75c	68c	70c	71c	29,400
Miner Boy	Colo													1 65	1.60	1.65	1.55	1.70	1.60	1.70	1.60	1.75	1.65	1.65		12,300
Moon, G	Cal.	750	5,000,000	50,000	100	275,000	Dec..	1880	50																	
Moose Silver	Colo			3,000,000																		1.75				200
North Standard, G	Cal.																					1.75				200
Quicksilver preferred	Cal.	8,500	4,291,300	42,913	100	*								20c	19c			29c	20c	28c	20c	19c	17c	19c	17c	47,230
" common	Cal.	acres.	5,708,700	57,087	100	*										61				62	61¼	62⅛	62	6 ¼	63	6,600
Rappahannock, G	Va.	345 acres	250,000	250,000	1	*								13½	13					14½		15		16	1⅜	800
Red Elephant	Colo		5,000,000	500,000	10	*								14c		14c	13c							13c		1,500
Silver Cliff, S	Col.		10,000,000	200,000	50	*								28c	27c			25c		25c				22c	23c	900
Silver Nugget	Ariz		2,000,000	200,000	10	*								4.60	4.50	4.60	4.50	4.75	4.65	4.60	4.55	4.63	4.50	4.60		3,950
" new stock	Ariz		2,500,000	250,000	10									22c	21c	21c	24c	22c	20c	25c	21c	19c	24c	23c	25c	97,200
South Bodie, G	Cal.	1,500	10,000,000	100,000	100	85,000	Nov.	1880	0 25					56c	51c	56c	52c			57c	52c	56c	52c	56c	54c	18,550
South Bulwer, G	Cal.	1,500	10,000,000	100,000	100	170,000	Dec.	1880	0 25																	
South Hite G. M. Co	Cal.		2,500,000	100,000	25	*												30c	28c			35c				400
Sutro Tunnel	Nev.		20,000,000	2,000,000	10	*																				400
Tioga	Cal.	1,500	10,000,000	100,000	100	225,000	Nov.	1880	0 15					1.75	1.50	1.63	1.50	1.63	1.60	1.60		1.63	1.60	1.63	1.55	7,050
Tip-Top	Ariz	1,500	10,000,000	100,000	100	120,000	Mar.	1880						45c								46c				400
Tuscarora, S	Nev.		10,000,000	100,000	100	80,000	Oct..	1880	0 15																	
Unadilla	Colo		500,000	50,000	10	*								21c	20c	19c		19c	18c	18c	15c	15c		15c	13c	9,800
Union Cons. G. S	Nev.	800	10,000,000	100,000	100	1,060,000	Mar.	1881	1 00					15c	12c	14c				14c	13c	14c				5,400
Vandewater	Nev		2,000,000	200,000	10	*								7.00												100
Willshire	Cal		50,000	50,000	1	*								57c	54c	55c	52c	54c	45c	60c	48c	53c	49c	50c	46c	23,600
														1.65	1.55	1.60		1.50		1.45		1.40		1.45	1.40	3,700

G. Gold. Silver. S. L, Lead. C. Copper. *Non-Assessable. † The Deadwood mine paid in dividends, previous to the consolidation, $275,000. Total shares sold during the week, 948,950.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS. Mar'h 25.	Mar'h 26.	Mar'h 28.	Ma 29.	Mar'h 30.	Mar'h 31.	Opening. April 1.
Alpha	2½	.....	2¾	2⅞	2⅝	.....	.....
Alta	2¾	2	1⅞	1⅞	1⅞	1⅞	.....
Argenta	.....	.....	.....	.....	.....	.....	.....
Bechtel	19-32	19-32	11-16	21-32	9-16	9-16	.....
Belcher	1½	1¾	1¾	1¾	1¾	1¾	.....
Belle Isle	.....	.....	.....	.....	.....	.....	.....
Belvidere	.....	.....	.....	.....	.....	.....	.....
Best & Bel.	7⅝	9	8⅝	8¼	8⅝	8	.....
Bodie	6	5⅞	6	6	.....	.....	.....
Bullion	5-16	5-16	11-32	13-32	5-16	.....	.....
Bulwer	.....	.....	1⅞	.....	1⅞	.....	.....
California	15-16	15-16	15-16	1	1	1⅛	.....
Chollar	1¾	1⅞	2	2	2	1⅞	.....
Con. Imp	.....	.....	.....	.....	.....	.....	.....
Con. Pacific	.....	.....	¼	29-32	29-32	13-16	.....
Con. Va	1⅝	1⅝	1⅝	1¾	1¾	2	.....
Crown P'int	1⅛	1¼	1¼	1¼	1¼	1¼	.....
Eureka Con	.....	24¼	24½	26	26	25¾	.....
Exchequer	13-16	27-32	1⅛	1⅛	1⅛	1	.....
Goodshaw	.....	.....	.....	.....	.....	.....	.....
Gould & Cur	3⅞	4¼	4⅜	4¼	4¼	4¼	.....
Grand Prize	11-16	19-32	19-32	19-32	½	½	.....
Hale & Nor.	3¼	3¼	3¼	3⅜	3⅜	3⅜	.....
Mar. White	.....	3-32	3-32	3-32	1-16	1-16	.....
Mexican	4¾	5¼	5⅛	5	4¾	4⅝	.....
Mono	.....	1	1	.....	1	1	.....
North. Belle	13⅝	13¾	13¾	13¾	.....	14	.....
Noonday	1⅝	1¾	1⅝	1⅝	1¾	1¾	.....
Ophir	3⅞	3½	3¾	3⅞	3¾	3¾	.....
Oro	¼	¾	13-16	13-16	13-16	11-16	.....
Overman	21-32	21-32	11-16	¾	11-16	27-32	.....
Potosi	2¼	2⅝	2½	2⅝	2¼	2¼	.....
Savage	1⅝	2	2¼	2	2	2	.....
Scorpion	1⅛	1⅛	1¼	1¼	1¼	1⅛	.....
Sierra Nev.	6¾	7⅛	7¼	7⅝	7¼	7	.....
Silver King	22¾	22¾	22½	24	24	23¾	.....
So. Bulwer	.....	.....	.....	.....	.....	.....	.....
Tioga	.....	.....	.....	.....	.....	.....	.....
Tip Top	4½	.....	.....	.....	.....	4	.....
Tuscarora	.....	.....	.....	.....	.....	.....	.....
Union Con.	6⅝	7	7¼	7½	6⅞	6⅝	.....
Utah	.....	.....	.....	.....	.....	.....	.....
Wales	15-16	15-16	.....	29-32	.....	27-32	.....
Yel. Jacket	2⅝	2¾	3	3¼	3¼	3	.....

REVIEW OF THE SAN FRANCISCO MARKET.

The principal point of interest coming under this head is a decision in the Burke-Bonanza suit, rendered against the Bonanza firm, Flood *et al.*, on the 30th of March. A press dispatch says:

It is estimated that the amount of money Flood and others will be called upon to pay over, should they conclude not to appeal, will be between $800,000 and $900,000. This decision will have an important bearing on other suits now pending, involving several million dollars. The news of the decision had no marked effect on the price of stocks. The decision has been the general topic of conversation on the street this afternoon. The plaintiff and those interested on his side of the question in this and other suits express great satisfaction, and hold that, although the recovery of a larger portion of the amount at issue in this suit (something over $10,000,000) is held by the decision to be barred by the statute of limitations, the principle for which they contend is fully established. They claim that, in the suit to recover the value of tailings, to the amount of $26,000,000, which is set for next May, the statute of limitations will be pleaded, and that a decision in their favor is almost a foregone conclusion, as the case is much stronger than the one decided to-day. The case will probably be taken to the Supreme Court on appeal.

Silver King is strong, closing yesterday at $23¾ per share. It is rumored that the control of this property is passing into new hands. Eureka Consolidated closed yesterday at $25¾. The rumors regarding the recent reported strike in this mine are conflicting.

Hall & Norcross is steady. This company held its annual meeting on the 9th inst. Following is the financial statement of the company:

RECEIPTS.

Cash balance on hand	$56,010.81
Collected from assessments	296,723.50
Sundries	3,554.14
Bullion received	33,016.32
Overdraft at Nevada Bank	6,092.41
Total	$395,397.18

EXPENDITURES.

Chollar-Norcross-Savage shaft		$34,742.87
Labor, etc., including salaries		146,933.21
Mine supplies		19,569.23
Wood		56,731.25
Pumping Savage water		37,664.86
Water and ice		12,377.10
Sundries		53,399.98
Total		$361,418.50
To balance—		
P. Deidesheimer's account	$759.69	
Bullion	33,005.97	
Cash	213.02	
		33,978.68
Grand total		$395,397.18

The following statement shows the price per share

COAL STOCKS.

Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.

NAME OF COMPANY.	Capital Stock.	Shares. No.	Par Val.	Last Dividend. Mo.	Y.	R't.	Rate per Ann.	Mar. 26. H.	L.	Mar. 28. H.	L.	Mar. 29. H.	L.	Mar. 30. H.	L.	Mar. 31. H.	L.	April 1. H.	L.	SALES
Am. Coal Co.	$ 1,500,000	60,000	$ 25	.....	.....	.....	Per c'nt	52½	52	53⅛	52¾	54	53¾	55¼	53⅝	56¾	55¼	56¾	55¾	14,519
Col. C. & I.	10,000,000	100,000	10	.....	.....	.....	.....	.....	.....	25	23⅞	25¾	25	26	25⅝	26¾	25⅞	26⅜	25⅛	18,243
Ches. & O. RR	15,000,000	150,000	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Consol. Coal	10,250,000	102,500	100	Jan.	77	2½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	.....	
Cumb. C. & I.	500,000	5,000	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Del. & H. C.	20,000,000	200,000	100	Aug	76	4	9	†	109⅛	111¼	110	111⅜	111	111⅜	110¼	112⅛	110¾	112⅛	111⅞	47,851
D., L. & W. RR	26,000,000	524,000	50	Jan.	81	1½	6	‡	120⅛	124¼	121¾	124¾	123	126⅜	122⅝	124⅝	123¼	123	121⅜	531,970
Elk Lick C Co																				
Lehigh C. & N	10,448,500	208,971	50	Sept	76	1½	6¼	45⅜	45¼	46¼	45⅜	46¼	46⅛	46⅛	46	46¼	.....	.....	.....	14,368
Leh. V'y R. R	27,042,900	540,858	50	.....	.....	.....	.....	60	.....	61	60	61	60¼	.....	27	.....	60¼	60¼	.....	1,363
Mary'd Coal	4,400,000	44,000	100	Jan.	76	1½	1½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Montauk C'l.	2,500,000	25,000	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Morris & Es'x	15,000,000	300,000	50	July	79	3½	7	.....	.....	.....	.....	.....	.....	122	.....	122¾	122¼	122½	122¼	1,064
New Cen. C'l	5,000,000	50,000	100	Dec.	80	2		29½	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	300
N. J. C. RR.	20,000,000	200,000	100	Apr	76	2½	2½	102	100¼	102⅜	101	103	101⅜	102⅝	101⅜	102⅞	101⅞	103⅛	101⅝	150,125
Penn. Coal	5,000,000	100,000	50	Oct.	79	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Penn. R. R.	68,870,200	1,337,404	50	Nov.	80	3	.....	66	.....	66¼	66	66¼	66	65⅛	65⅛	66⅛	66	.....	.....	32,677
Ph. & R. RR*	34,278,150	685,563	50	Jan	76	2½	10	61¼	60¼	64	61¼	63¾	63¼	64	63	63¾	.....	63⅞	.....	38,859
Spring Mt. C'l	1,500,000	30,000	50	Dec.	79	3½	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	

*Of the sales of this stock, 21,800 shares were sold at the Philadelphia Stock Exchange, and 17,059 shares at the New York Stock Exchange.

†110¾. ‡122⅝.

Total Sales..... 851,930.

BOSTON MINING STOCKS.

NAME OF COMPANY.		Shares.	Par.	Mar. 25. H.	L.	Mar. 26. H.	L.	Mar. 28. H.	L.	Mar. 29. H.	L.	Mar. 30. H.	L.	Mar. 31. H.	L.	SALES. Shares
Acton Con	Me.	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Adrie Con. g. s.	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Allouez, c	Mich.	80,000	$25	.....	.....	.....	.....	3¼	.....	.....	.....	3.00	.....	.....	.....	150
Arizona & Mass.	Ariz.	.....	.....	1.00	.95	.....	.....	.....	.....	1.00	.....	.....	.....	.....	.....	1,400
Arizona Queen	Ariz.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic, c	Me.	40,000	25	.....	.....	.....	.....	13¾	.....	.....	.....	.....	.....	.....	.....	50
Atruta		.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aztec	Mich.	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bald Mountain	Colo.	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blue Hill, c	Me.	50,000		.....	.....	.....	.....	.....	.....	4¾	.....	.....	.....	.....	.....	100
Bonanza Chief		.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston, g. and s.	Colo.	.....	25	5.60	.....	5.62	5.60	5 62½	5.60	5.62	.....	5.62	5.60	.....	.....	3,700
Boston & Eureka		.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Breece		.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brunswick	Me.	.....		16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Cal. & Hecla, c	Mich.	100,000	10	244	.....	243	242	242	.....	242	240	240	.....	.....	.....	182
Catalpa	Colo.	300,000	25	2.25	2.13	2¼	2 3-16	2 3-16	.....	2 3-16	.....	2⅛	2 3-16	.....	.....	4,350
Central, c	Mich.	20,000	50	.....	.....	.....	.....	.....	.....	34	.....	.....	.....	.....	.....	6
Contentment	Ariz.	.....	.....	.....	.....	2⅛	2⅛	2¼	.....	.....	.....	.....	.....	.....	.....	800
Copper Falls, c	Mich.	20,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Copper Harbor	Mich.	.....	.....	.....	.....	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Crescent	Mex.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crystal Mica	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dana, c	Mich.	20,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Deer Isle	Me.	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Douglass	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duncan, s	Ont.	60,000	25	3½	.....	3¾	.....	3½	.....	.....	.....	3¾	.....	.....	.....	300
Dunkin	Colo.	.....	.....	.....	.....	1 62½	1.55	1.75	1.65	1.67	1.45	1.60	1.50	.....	.....	8,600
Empire	Ariz.	.....	.....	1 25	1.00	1.25	1.10	1.20	1.10	1.20	1.00	1.15	1.00	.....	.....	48,492
Eureka Tunnel		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin, c	Mich.	20,000	.....	.....	.....	13½	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
Golden Circle	Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Hill	Colo.	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Stripe	Cal.	.....	.....	3.05	.....	3.09	3.08	3.05	.....	3.06	.....	.....	.....	.....	.....	860
Granger, c	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gregory	Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hanover	Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Harshaw	Ariz.	100,000	100	11	.....	12	.....	.....	.....	11	.....	10½	10¼	.....	.....	253
Haverly G. Grp.	Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hercules	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hibernia		.....	.....	.....	.....	.....	.....	.91	.....	.....	.....	.....	.....	.....	.....	100
Horn-Silver, s	Utah.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humboldt, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hungarian, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Huron	Mich.	.....	.....	.....	.....	.....	.....	3¾	.....	3¾	.....	.....	.....	.....	.....	75
International, s.	Ont.	60,000	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Madison	Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Magnolia	S. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maine Mica	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mass. & N. Mex.	N. M.	.....	.....	.70	.69	.72½	.69	.70	.62	.63	.60	.60	.....	.....	.....	4,830
Mendocino	Cal.	.....	.....	3.00	2.88	2.90	2.88	2,90	.....	3.10	2.90	3.00	2.90	.....	.....	3,550
Mesnard, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican	Nev.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milton	Me.	.....	.....	1.15	.....	1.20	1.12	.....	.....	1.30	1.25	1.15	1.14	.....	.....	900
Minnesota, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
National, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mex. D. D.	N. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N.E. Wat'r Meter		.....	.....	.....	.....	4¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
North Castine	Me.	.....	.....	.....	.....	3.00	.....	.....	.....	3.00	.....	.....	.....	.....	.....	300
Osceola, c	Mich.	40,000	25	37	.....	37	.....	36	.....	.....	.....	.....	.....	.....	.....	101
Panther Con		.....	.....	.....	.....	.....	.....	.60	.....	.65	.....	.60	.....	.....	.....	400
Pewabic, c	Mich.	20,000	25	16	.....	.....	.....	16	.....	16	.....	16	.....	.....	.....	350
Phœnix, c	Mich.	20,000	50	.....	.....	.....	.....	2¼	.....	.....	.....	2⅛	.....	.....	.....	500
Pine Tree	Me.	.....	.....	.....	.....	2¾	2.10	2.75	2.50	2.88	2.75	2.88	2.75	.....	.....	8,500
Promontory Con	Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quincy, c	Mich.	.....	.....	33	.....	33	32¾	32½	.....	32	.....	32	.....	.....	.....	142
Revere	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ridge, c	Mich.	20,000	25	5.50	.....	.....	.....	5.25	.....	.....	.....	4.00	.....	.....	.....	225
Rockland, c	Mich.	20,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rudisill		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Clair		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salem-Sullivan		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Pedro	N. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Islet, s	Mich	40,000	25	.....	.....	29	.....	29	.....	28	.....	.....	.....	.....	.....	30
Simpson Gold	N.C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
So. Hite, c	Cal.	100,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Noonday	Cal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Side		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Star	Nev.	.....	.....	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	250
Stewart	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sul'v'n & Wa'k'g	Me.	.....	.....	.....	.....	.....	.....	6¾	.....	6¾	.....	.....	.....	.....	.....	200
Superior, c	Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel	Nev.	*	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Swan's Isle	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sycamore	Ariz.	.....	.....	1 9-16	.....	.....	.....	1.75	.....	1.75	1.60	1.75	1.60	.....	.....	1,750
Tecumseh		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tremont Silver		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tuolumne	Cal	.....	.....	1.23	.....	1.25	.....	1.25	.....	1.25	.....	1.25	.....	.....	.....	700
Twin Lead	Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington	Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Young Hecla		.....	.....	.....	.....	.....	.....	.50	.....	.....	.....	.....	.....	.....	.....	200

c. Copper. s. Silver.

of the stock of the Hale & Norcross mine during the flush times of 1867-8:

1867.	Per share.	1867.	Per share.
Jan. 1	$2,500	Nov. 4	$920
Feb. 23	2,900	Dec. 10	815
March 23	3,650	1868.	
May 1	3,500	Jan. 1	1,350
June 7	3,350	Jan. 10	1,450
Sept. 14	1,400	Feb. 7	3,000
Oct. 9	440	Feb. 11	5,600

The shares some time afterward sold at $7600 each. In 1873, they were increased to 112,000.

Potosi closed yesterday at $2¼. At the recent annual meeting of the company, in San Francisco, the old officers were re-elected. The financial operations of the company for the last year were as follows:

RECEIPTS.

Assessments	$162,067.40
Materials sold	1,988.11
Cash for superintendent	259.67
	$164,315.18

DISBURSEMENTS.

Chollar-Norcross shaft	$62,044.34
Labor	10,010.00
2400-foot drift	30,643.26
Paid overdraft last year	30,344.17
Supplies, legal expenses, etc	7,298.49
Cash with superintendent	23,274.91
	$163,615.17

At the annual meeting of the Chollar Mining Company, on March 16th, the old officers were re-elected. The financial statement shows, receipts: Cash on hand March 17th, 1880, $23,606.57; received from assessments, $118,668; received from sale of material, $1950.10; from stable account, $102.90; balance, cash in hands superintendent, $32.08; total, $144,359.65. Disbursements: Labor account, $27,431.22; cash in hands of superintendent, $29,818.24; cash on hand, $741.93; Chollar-Norcross-Savage shaft, $62,044.33; pumping, $8535.40; legal expenses, $1776.25; sundries, $13,802.28.

The Assessment Record.—The *Bulletin* of March 7th says: The money to be collected this month will be apportioned as follows:

Nevada	$204,900
California	183,500
Arizona	10,000
Utah	9,000
Mexico	10,000
Total	$417,400

The depressed condition of the mining industry is well illustrated in the foregoing list, which is the lightest amount asked for any month in years. Were it easy to collect assessments, there would have been no such falling off in the levy. The record for the first quarter this year is as follows:

	Mines.	Amount.
January	30	$780,500
February	29	886,400
March	29	417,400
Totals	88	$2,084,300
In 1880	122	3,411,500
In 1879	124	3,893,000
In 1878	112	3,542,600

The amount delinquent this year is 35 per cent less than in previous years. The $2,084,300 which it is assumed will be collected between January 1st and March 31st, 1881, will be apportioned as follows:

	January.	February.	March.
Nevada	$563,600	$633,400	$204,900
California	176,400	143,000	183,500
Utah			9,000
Dakota		75,000	
Arizona	33,000	35,000	10,000
Mexico	7,500		10,000
Totals	$780,500	$886,400	$417,400

Of the $1,401,900 apportioned to Nevada in the first quarter this year, $1,136,900 goes into Storey County, from which not a dollar is returned in dividends.

Copper and Silver Stocks.

Reported by C. H. Smith, 15 Congress street, Boston, Stock Broker and Member of the Boston Mining and Stock Exchanges.

BOSTON, March 31.

The market for copper stocks the past week has ruled dull and featureless. There seems to be no disposition to operate in them, and the lots that find their way into the market are taken at lower figures. Ingot copper is steady at about 19@19¼c., and at present there seems to be no expectation of an advance, the supply being in excess of the demand. The silver stocks, with perhaps two or three exceptions, have also been without activity, and prices generally have a tendency downward.

Calumet & Hecla declined from $245 to $240, with rather more sales than usual. The stock being pressed for sale is the immediate cause for the decline.

Central declined from $35 to $34 on small sales.

Franklin very dull, only 25 shares sold at $13¼.

Pewabic holds steady at $16, at which all the sales reported were made.

Quincy has felt the depressing influence of the market, and has declined from $33@$31¾. There is, however, but little stock offering, and no disposition to press sales.

Osceola declined from $37@$36.

Atlantic sold at $13¾.

The rest of the market was stupidly dull.

We note small sales of Huron at $3¾—a decline of $¾.

Allouez sold at $3¼@$3.

Phœnix, $2¼@$2⅛.

Blue Hill, $4¼@$4 11-16.

Ridge, $4.

Star, $1⅛.

Brunswick Antimony, 10 shares at $16.

In silver stocks, Catalpa maintains a good degree of firmness at $2⅛@$2¼, with sales of about 4000 shares.

Contentment steady at $2⅜@$2¾.

Harshaw declined from $12 to $10¼.

Silver Islet from $29 to $28.

Duncan Silver sold at $3¾@$3¼.

Sullivan & Waukeag sold at $6¾.

A new mine on the Sullivan lode, called Pine Tree, was put on the board this week at $2¼, with large sales, ranging up to $2⅜.

The Bonanza Development Company was also called and sales reported at $3@$3¼.

3 P.M.—There was no improvement at this afternoon board, the market closing dull and lower; sales of Franklin at $12; Huron, $3¾; Harshaw, $10¾; Pine Tree, $2¾.

Calumet & Hecla offered at $240; Pewabic, $15 bid, none offered; Quincy, $31¾@$32; Silver Islet, $27 bid. At the Mining Exchange, the transactions were much lighter than last week, although a fair amount of business was done. Empire continues to be the special feature, with sales from $1.17@$1, closing this P.M. at $1.08 bid; quite an active business was also done in Dunkin this week, from $1.50@$1.65, with sales on Wednesday at $1.45, seller 30.

Gas Stocks.

NEW YORK, Friday Evening, April 1.

These stock are very weak, and prices are dropping in consequence of the electric light agitation. The Mutual Gas Company has declared a dividend of 1½ per cent, payable April 10th. The sales of the stock of this company at the American Mining Board during the past week have amounted to 145 shares at $70@$69½. The Municipal Gas Company declares a dividend of 5 per cent, payable April 4th. A cable dispatch from London says that gas stocks have been very flat upon another scare caused by the preparations to light the city streets by electricity. The fall varies from 8 to 5.

The bids for lighting the streets for one year from the first of May next were opened and found to be as follows:

New York Gas-Light Company, for all the public lamps south of Grand street, at the rate of $18 per lamp.

The Manhattan Gas-Light Company, for all the lamps between Grand and Thirty-fourth streets, at $18 per lamp.

The New York Mutual Gas-Light Company, for a certain portion of the lamps on the streets and avenues between Thirty-fourth and Sixty-fifth streets, and all the lamps in the public parks between Thirty-fourth and Grand street, at $18 per lamp.

The Metropolitan Gas-Light Company, for a portion of the lamps between Thirty-fourth and Seventy-ninth streets, at $18.25 per lamp.

The Municipal Gas-Light Company, for a number of streets between Grand and Seventieth streets, at $20 per lamp.

The Harlem Gas-Light Company, for all lamps between Seventy-ninth street and Harlem River, at $19.50 each.

The Central Gas-Light Company, for the lamps in the Twenty-third Ward, at $30 per lamp.

The Northern Gas-Light Company, for the lamps in the Twenty-fourth Ward, at $38 per lamp.

The Yonkers Gas-Light Company, for a portion of the lamps in the Twenty-fourth Ward, at $30 each.

Two bids were received from the Brush Electric Illuminating Company. They were for furnishing voltaic arc lights of 2,000 candle-power each throughout Wall street, Broadway, from the Battery to Forty-second street; Fifth avenue, from Fourteenth street to Forty-fifth street; Eighth avenue, from Fourteenth street to Forty-fifth street; Fourteenth street, from Third avenue to Eighth avenue; Twenty-third street, from Third avenue to Eighth avenue; Thirty-fourth street, from Third avenue to Broadway; Forty-second street, from Third avenue to Broadway, and two elevated groups of six lights, of 6000 candle power, on Madison and Union squares, all for the sum of $32,000 a year. This bid would cover an area now lighted by 1700 gas lamps. The other bid of the company is for a smaller district, displacing about five hundred lamps, the consideration demanded being $7400.

Action on these bids will be taken in a few weeks. All the gas companies demand a higher rate than that paid by the city last year.

Ithaca, N. Y.—A company has been formed in this place to manufacture gas from crude petroleum. The price proposed is $1.40 per thousand feet.

Philadelphia Gas Trust.—A dispatch from Philadelphia dated the 31st ult. says: At a special meeting of City Councils this afternoon, Mr. John Bardsley, Chairman of the Joint Special Committee to investigate the management of the Philadelphia Gas-Works, presented its report, of which the following is a synopsis:

First. That the trustees are guilty of gross mismanagement in their purchase of coal. The committee finds as a fact that the Trust has, since January 1st, 1876, paid an average of about one dollar more per ton for coal than was paid by other consumers of gas-coal within the port of Philadelphia. Since that time, the Trust has purchased about 1,250,000 tons of coal, which would show a loss to the Trust of $1,250,000.

Second. The committee thinks the leakage too great, and believes that it can be reduced 5 per cent. A saving of this percentage would amount to at least $125,000 per annum.

Third. The Trust seems to employ about 15 per cent more men than is required by the annual production. This excess of men results from the political condition of the Trust; as it is a matter which represents about $150,000 per annum, it should be immediately remedied.

Fifth. The trustees have been culpable in making contracts for the sale of residuals and the purchase of coal and supplies.

Sixth. The Trust's standard is not sufficiently high in selecting chief executive officers. These officers appear to have had control of the entire business under the sanction of the board, though selected without regard to previous professional training.

In conclusion, the committee recommended the adoption by the Councils of resolutions requiring the board of trustees of the Gas-Works to advertise for coal and supplies as do the other departments of the city, calling upon the incoming Councils for 1881 to pass an ordinance taking possession of the Gas-Works, and bringing the department under the direct control of the Councils, and instructing the city solicitor to file a bill in equity against the trustees of the Gas-Works, looking to a proper account by them of their management and conduct.

The resolutions were adopted by the Common Council, and the committee was discharged.

The Electric Light.—Dispatches from London state that experiments with the Siemens and the Brush electric systems of lighting streets were made to-night in the district of the city lying between London Bridge and Blackfriars Bridge, embracing Cheapside, St. Paul's churchyard, Ludgate Hill, King and Queen, King William, and New Bridge streets. They were highly successful.

Chicago Gas.—The Common Council of Chicago, Ill., has appropriated $327,500 for lighting the streets of that city for the next fiscal year.

The following list of companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 19 Broad street, New York. Quotations are based on the equivalent of $100.

Companies in New York and Vicinity.	Capital Stock.	Par.	Dividends. Rate per ann.	Dividends. Am. of last.	Dividends. Date of last.	Quotations Bid.	Quotations As'd.
	$		P. ct.				
Mutual, N. Y.	5,000,000	$100	6	1½	April '81	65	68½
" Bonds	900,000	1,000	6	3½	Aug. '80	100	105
N. York "	4,000,000	.....	8	4	Nov., '80	93	98
Metrop. "	2,500,000	100	10	6	Feb., '81	130	132
" Certfs.	1,000,000	.....	7	3½	Feb., '81	100	105
Harlem "	1,850,000	50	.....	3	Feb., '81	64	67
Manhat. "	4,000,000	50	.....	5	Feb., '81	175	176
Brooklyn, Bkln.	2,000,000	50	.....	5	Nov., '80	110	114
Nassau "	1,000,000	25	.....	3½	Jan., '80	50	55
" Certfs.	700,000	1,000	7	3½	Nov., '80	90	95
People's	1,000,000	10	.....	3½	Jan., '76	25	30
" 1st m. Bonds	400,000	.....	7	3½	Nov., '80	101	104
Bonds	100,000	.....	6	3	Jan., '81	75	80
Metrop. "	1,000,000	100	5	2½	Jan., '81	55	60
W'msb'g "	1,000,000	50	.....	2	Jan., '81	57½	62½
" Bonds*	1,000,000	1,000	6	3	Oct., '80	101	104
Citizens'	1,200,000	20	.....	2½	Aug., '80	40	46
" Bonds	315,000	1,000	.....	3½	Oct., '80	100	105
J. C., N. J.	750,000	20	.....	7½	Jan., '81	150	155
Municipal, N. Y.	2,000,000	100	.....	5	April '81	140	150
" Bonds	750,000	100	7	3½	Nov. '80	105	110
Fulton Municipal	1,500,000	100	.....	.....	.....	.....	55

Coal Stocks.

NEW YORK, Friday Evening, April 1.

During the past few days, the extreme activity which has characterized these shares has somewhat subsided, and on a moderate business prices are stronger and advancing. Delaware, Lackawanna & Western has as usual absorbed the bulk of the dealings, the sales amounting to 531,970 shares at $1.24¼@$1.21½, the latter price being ex dividend. Delaware & Hudson has been active and strong, the price varying from $109¼ to $112½, on sales of 47,850 shares. Chesapeake & Ohio has shown unexpected strength, the common stock advancing from $23 to $26¾; the sales amount to 18,243 shares. Reading has had a moderate business at better prices; the sales amount to 17,059 shares at $60¼@$64. It is expected that the decision of the court as to the validity of the late election of officers of this company will be given to-morrow.

New Jersey Central has been very active and

steady ; the sales amount to 150,125 shares at $100¼ @$103¼.

There have also been sales of 300 shares of New Central Coal at $29¼@$29; 100 shares of Maryland Coal at $27 ; 14,519 shares of Colorado Coal and Iron at $52 @$56¾ ; and 500 shares of Consolidated Coal at $35.

The following are the sales reported at the American Mining Board during the past week : 2300 shares of Pennsylvania RR. at $66¼@$65⅞; 600 shares of Lehigh Coal and Navigation at $46¼@$45¼ ; 300 shares of Lehigh Valley at $60⅛@$60 ; and 100 shares of Mahoning Coal at $24.

BULLION MARKET.

NEW YORK, Friday Evening, April 1.

There is nothing new to report on silver for the week, except a slightly better rate for sterling exchange.

DAILY RANGE OF SILVER IN LONDON AND NEW YORK, PER OZ.

DATE.	London	N. Y.	DATE.	London	N. Y.
	Pence.	Cents.		Pence.	Cents.
March 26..	52⅛	112⅜	Mar. 30.	52⅛	112¼
March 28..	52⅛	*	Mar. 31.	52⅛	112¼
March 29..	52⅛	112¼	April 1.	52⅛	112½

* 112⅜@112½

BULLION PRODUCTION FOR 1881.

We give below a statement showing the latest bullion shipments. These are officially obtained from the companies, where that is possible ; and where official statements can not be procured, we take the latest shipments published in those papers nearest to the mines reported. The table gives the amount shipped for the week up to the date given, as well as the aggregate shipments to such date, from the first of January, 1881.

The shipments of silver bullion are valued at $1.29·29 per ounce, Troy ; gold at the standard $20.67 per ounce, Troy. The actual value of the silver in the following table is therefore subject to a discount, depending on the market price of silver. The price of silver being now about $1.12 per ounce, the following figures, where they relate to silver bullion, should be diminished by about 13½ per cent to arrive at actual value :

MINES.	States.	For the week.	Month of March.	Year from Jan. 1st, 1881.
Alice	Mont	.....	.....	$68,338
Barbee & Walker	Utah	$3,481	$18,131	76,646
Belmont	Mont	.....	.....	15,270
Bodie	Cal	8,730	25,230	96,339
Bodie Dis. Banks, etc.	"	.....	.....	10,138
Bos. & Colo. S. W'ks.	Colo	.....	.....	253,000
California	Nev	.....	.....	33,836
Caribou	Colo	.....	.....	38,817
Christy	Utah	10,809	31,838	112,708
Concordia	Cal	.....	.....	2,234
Connor	Utah	.....	10,070	28,375
Contention	Ariz	25,650	102,710	397,720
Crismon-Mammoth	Utah	2,800	2,800	15,254
Custer	Idaho	.....	.....	42,861
Derbic	Cal	.....	5,400	34,189
Dexter Mill	Mont	.....	.....	11,000
Elkhorn Mill	Dak	.....	.....	5,000
Eureka Con	Nev	35,600	136,750	377,323
Exchange Silver	"	.....	.....	44,400
Ferry Bullion	.....	.....	4,710	4,710
Fresno Enterprise	Cal	.....	.....	9,600
Frisco M. and S. Co	Utah	.....	.....	46,086
Germania	"	9,680	50,854	164,119
Grand Central Mill	Ariz	.....	10,000	10,000
Grand Prize	Nev	.....	10,000	41,414
Hale & Norcross	"	.....	.....	33,090
Head Center	Ariz	.....	9,820	9,820
Hermosa Mill	"	.....	.....	12,000
Horn-Silver	Utah	5,000	51,569	201,072
Idaho	Cal	.....	.....	51,000
Independence	Nev	.....	.....	14,000
Indian Queen	"	.....	.....	26,156
Iron Silver	Colo	.....	.....	171,717
Jocusta	Mex	.....	.....	82,000
Lexington	Mont	.....	.....	7,000
Little Chief	Colo	.....	.....	63,314
Mack Morris	Ariz	5,196	5,196	126,499
Mingo	Utah	.....	.....	4,554
Morgan	"	.....	.....	24,179
Morning Star	Colo	.....	.....	15,200
Mount Potosi	Nev	9,500	31,580	51,380
Navajo	"	12,000	32,000	52,981
Nevada Silver Ore	Utah	4,025	9,575	9,575
Noonday	Cal	.....	33,480	90,193
Northern Belle	Nev	24,330	96,430	308,887
Oneida	Cal	.....	.....	8,684
Ontario	Utah	44,586	155,231	509,187
Ophir	Nev	.....	.....	5,170
Pascoe	Utah	1,800	1,800	3,450
Rebellion Ore	"	3,700	3,700	3,700
Richmond	Nev	47,001	103,619	373,164
Sierra Nevada	"	.....	.....	16,775
Silver Bow	Mont	.....	.....	51,342
Silver King	Ariz	.....	.....	124,798
Sullivan	Maine	5,000	5,000	5,000
Standard	Cal	43,480	195,952	622,440
Star	Nev	.....	2,800	31,213
Stormont	Utah	.....	.....	77,249
Syndicate	Cal	.....	.....	21,273
Tintic M. and M. Co	Utah	.....	10,277	34,269
Tip Top	Ariz	.....	38,000	147,900
Tombstone M. & M. Co	"	.....	38,894	213,196
Union Con	Nev	.....	.....	43,000
Wood River	Idaho	.....	.....	6,450

ARIZONA.

We give below the official statement of Wells, Fargo & Co. of their shipments of bullion from the territory during the month of February. Of course, this does not embrace by any means the whole amount of treasure shipped from the territory during that period. There was a large amount shipped by private contract over the S. P. RR., and there was also a vast deal of base bullion and ore shipped in bulk during the same time :

Companies.	Gold.	Silver.
Contention	.....	$113,665
Florence	.....	31,788
Globe	$7,377	18,460
Harshaw	.....	46,138
Maricopa	.....	38,861
Mi lville	.....	134,125
Phœnix	.....	2,470
Tucson	3,495	2,665
Wickenburg	22,209	344
Wilcox	.....	3,212
Yuma	4,250	.....
Total	$37,691	$391,733

Vizina.—It is reported that this company is shipping daily 12½ tons of ore to the Boston mills. The ore milled from this mine during the month of February at this mill yielded $26,019.

CALIFORNIA.

Bodie Tunnel.—The Bodie *Free-Press* of March 18th says that $2200 were shipped from this tunnel recently, being the product of 100 tons of ore from the Festoon or No. 20 vein, taken from the tunnel level, about 200 feet vertically from the surface. Previous to this crushing, which was made in the Miners' mill, 13 tons of ore from other veins cut by the tunnel gave a yield of something over $200.

Standard.—The superintendent reports that during the week ending March 29th, 1233 tons of ore were shipped to the mill, average pulp-assay $26.13. Crude bullion received 3580 ounces. Shipments to San Francisco amount to about $43,480.39.

COLORADO.

Clear Creek.—This company shipped, recently, two bars of silver amounting to 2022 ounces.

Etna.—It is stated that this mine produced 185 tons of ore in the week ending March 19th. Most of it carries but little lead, but lately 148 tons returned 175 ounces of silver per ton and 42 per cent lead, and a small lot gave 268 ounces of silver and 62 per cent lead.

Iron Silver.—The manager reports for the week ending March 24th as follows: Ore delivered this week, 1456 tons; amount received, $36,930.29 ; ore delivered unpaid for, 1648 tons.

Legal Tender.—A recent report states that a fine body of ore has been struck in the 70-foot shaft. A mill-run, it is stated, gave 176 ounces silver and 4 ounces gold.

Miner Boy.—It is reported that a bar weighing 320 ounces was recently shipped from this mine ; and a bar of base bullion, principally copper, containing gold and silver, and weighing three hundred and twenty-two pounds, had been shipped previously. A mill-run made by Eddy & James, of a large lot of ore from the same mine, returned 57 ounces in silver and 13 ounces in gold to the ton. Net value of the ore per ton at this rate would be $200.

The Leadville *Circular* of March 26th gives the following table of the approximate daily output of the mines of the camp :

Mines.	Tons.	Mines.	Tons.
Miner Boy	12	Dunkin	15
Florence	8	Robert E. Lee	40
Little Silver	12	Silver Wave	100
Little Pittsburg	35	Crescent	10
Chrysolite	25	Highland Chief	30
Little Chief	15	Comstock	5
Iron Mine	250	Matchless	30
Catalpa	15	Hibernia	5
Oro La Plata	60	Big Pittsburg	8
Morning Star	35	Dyer	6
Argentine	15	Others, say altogether	30
Half-Way House	20	Etha	10
Robert Emmet	10	Agassiz	5
Carbonate Hill	3		
Henriette	50	Total, tons	934
Evening Star	65		

IDAHO.

The Mineral Belt District, situated from 8 to 10 miles west of Belleview, contains many of the best claims in Wood River. Several car-loads of ore sold in Salt Lake City for $150 per ton. The vein will average about 75 per cent lead in addition to the silver. About two hundred and fifty tons of $150 ore are now on the dump awaiting shipment. The Bullion mine, in the same neighborhood, discovered last summer by Edgington Brothers, has a shaft 175 feet deep and a tunnel 250 feet long, from which a large quantity of ore, worth $100 to $500 per ton, has been taken. Of this about 50 tons shipped to Salt Lake City yielded an average of over $200 per ton and some of it $2500. A thin streak of ore in the Bullion assays $10,000 to the ton. The Mayflower, adjoining the Bullion on the west, shows from 10 inches to 2 feet of solid mineral —a 20-ton lot of which yielded 180 ounces silver and 70 per cent lead ; and a 40-ton lot now awaiting shipment samples over 200 ounces silver and about the same percentage of lead. These shipments from the Mayflower were taken out of a small drift within 20 feet of the surface. The Jay Gould, O. K., Chicago, Garfield, and several others in the vicinity of the above-described properties, all discovered last summer, have produced from 50 to 250 tons of high-grade ore, and paid well from the grass-roots down. These veins average about two feet in width, and all carry from 65 to 80 per cent lead. In the Jay Gould, an ore-chimney worth $15,000 was uncovered at a depth of 6 feet, and one half of the O. K. sold for $15,000, when only a 10-foot hole had been sunk upon it.

MAINE.

Sullivan & Waukeag.—The first shipment of bullion from this mine, which arrived at Boston recently, consisted of five bricks, weighing respectively :

	Ounces.
No. 1	707
" 2	1,013
" 3	590
" 4	947
" 5	1,020

MONTANA.

Butte.—The shipment of silver bullion, through the express office of Butte, for the week ending Saturday, March 19th, foots up at 2629 pounds, valued at $42,069.

NEVADA.

Comstock Mines.—The Gold Hill *News* publishes the following mine reports for the week ending March 19th :

	Tons of ore raised.	Assay value per ton.
California	454½	$25.83
Consolidated Virginia	346½	30.83
Sierra Nevada	280½	.....

Grand Prize.—The average pulp-assay for the past week is stated to have been $125.74 per ton.

Navajo.—The average pulp-assay for the last week is stated to have amounted to $111.03 per ton.

MISCELLANEOUS.

Bullion Receipts from the Mines to New York.—The bullion received from the mines at the various offices in this city during the week ending with yesterday, as compiled from various sources, amounts to $299,068.01, as against $296,245.88, reported in our last.

The Philadelphia Mint Coinage.—PHILADELPHIA, March 31.—The official report of the coinage executed at the United States Mint in this city during the month just ended is as follows :

	No. of pieces.	Value.
Gold	1,145,690	$8,164,250
Silver	602,000	600,925
Base	2,814,200	28,226
Total coinage	4,561,890	$8,793,401

Assay Office Monthly Statement.—The following is a statement of the business at the United States Assay Office at New York for the month ending March 31st, 1881 :

Deposits of gold :		
Foreign coin	$1,500,000	
Foreign bullion	5,500,000	
United States bullion	520,000	
United States bullion (re-deposits)	14,000	
Jewelers' bars	66,000	
		$7,600,000
Deposits of silver :		
Miscellaneous	$69,000	
United States bullion, Colorado	85,000	
United States bullion, Idaho	500	
United States bullion, Lake Superior	1,000	
United States bullion, Montana	98,000	
United States bullion, Nevada	7,000	
United States bullion, New Mexico	22,000	
United States bullion, Utah	64,000	
United States bullion, Arizona	15,000	
Refined silver	151,500	
		509,000
Total deposits		$8,109,000
Gold bars stamped	$362,374	
Silver bars stamped	409,505	
		771,880

Transmitted to mint of the United States.

at Philadelphia, for coinage, gold	$14,694,924

The Gold Flood.—The steamship Neckar, which arrived at this city on March 26th from Europe, brought $221,160 in gold bars.

The steamer Republic brought on March 25th $1,485,000 in specie, and the Wyoming $1,000,000 in bullion.

The steamships Suevia, City of Richmond, and Arizona, which arrived at this city on March 28th from Europe, brought $23,000, $500,000, and $814,800, respectively, in gold coin and bars.

The steamship Frisia, which arrived at this city on March 31st from Europe, brought $70,000 in marks.

The imports of specie to this port, and received at the United States Assay Office, for the week ended March 26th, amounted to $3,147,800, making a total since August 2d, 1880, of $74,153,400, against $73,400,000 for the corresponding period last year. The payments to bankers, on foreign account, by the Assay Office, for the week ended yesterday, amounted to $633,377, making a total since August 2d, 1880, of $65,825,377.

The weekly statement of the Imperial Bank of Germany shows an increase in specie to the amount of 8,187,000 marks.

There was withdrawn from the Bank of England to-day (April 1st), for shipment to America, £207,000 bullion.

A Remarkable Bullion Shipment.—According to the Gold Hill *News*, the biggest bullion shipment ever made at one time from the Comstock was by the Bonanza mines for the week ending December 29th, 1877. It was as follows: Consolidated Virginia shipped at that date 133 bars of bullion weighing 16,668 pounds, and valued at $540,196. The California shipped 129 bars weighing 16,130 pounds, and valued at $558,903. Summary—December 29th, 1877, bullion shipment from the Bonanza mines : 262 bars of bullion (16 tons 818 pounds) valued at $1,099,099. This was one shipment, and made for that week, but really included eight days' run of the mills. It was loaded on flat-cars like pig-iron, and sent on the Virginia & Truckee Railroad without any special guard.

Exports of Gold and Silver from New York.

Week ending March 26th	$206,471.00
Corresponding week last year	80,317.00
Since Jan. 1st this year	2,947,310.00
Corresponding period last year	2,965,527.00

Gold Interest Paid Out by the Treasury.

Week ending March 26th	$105,011.85
Corresponding week last year	2,572,396.49
Since Jan. 1st this year	11,635,658.97
Corresponding period last year	16,484,893.06

WASHINGTON, March 31.—The Treasury Department purchased to-day 90,000 ounces of fine silver for delivery at the New Orleans Mint.

Director of the Mint Burchard left for the West yesterday. He will visit St. Louis for the purpose of carrying into effect the act passed at the last session of Congress for the establishment of an assay office in that city. He

will probably visit the New Orleans Mint before returning to Washington.

LONDON, March 30.—A dispatch from Paris, dated to-day, says: The Bank of France, in cashing its notes, pays three fourths of the amount in gold and the remainder in silver. The above dispatch is in reply to an inquiry whether it was true that the Bank of France pays no gold. The privilege of redeeming its notes either in gold or silver is one which is constantly exercised by the bank, both at Paris and at its provincial branches, according to the exigencies of the money market. The *Daily Telegraph* in its financial column says for the present gold is not wanted on American account. A small sum which arrived on Tuesday from Paris could not find a purchaser.

LONDON, March 31.—A telegram from the House of Commons states that England will not send a representative to the Monetary Conference at Paris.

The *Times* in its financial column says the Vienna *Continental Correspondence* states that the Austro-Hungarian Councillor of Legation, Count Kuefstein; Ministerial Councillor Niebauer, as adviser for Austria; and Herr Hegudus, member of the Reichsrath, as adviser for Hungary, will represent Austria-Hungary at the Monetary Conference at Paris. They will take a neutral stand-point, but with a slight inclination toward bi-metalism. This tendency, however, will be shown only in case Germany inclines to the same view. The delegates will especially declare that Austria-Hungary does not regard the regulation of monetary values, but only the study and discussion of the project, as the object of the conference.

METALS.

NEW YORK, Friday Evening, April 1.

The featureless condition of the metal market continues in spite of a constant, fair, and, in some instances, large consumptive demand; the impetus given to production a little over a year ago by high prices, however, still has its effect, and stocks must be reduced before any great improvement in prices can be looked for.

Copper is flat, and the market dull; business has been done at 18⅞@19c. Closing quotations may be called nominal, with Lake at 19c., Baltimore, 18½c. for cash spot stuff.

Messrs. Richardson & Co., of Swansea, report the sales of copper ores there by public ticketing on March 15th as follows: Whole sale, 1382 tons 21 cwt.; average produce, 7⅛ per cent; copper contents, 98 tons 15 cwts. 1 qr. 22 lbs.; price per 21 cwt. of ore, £4 4s. 7d.; price per ton of 21 cwt. of ore-copper, £59 3s. 10d.; price per unit of produce, 11s. 10d.; total gross sale, £5846 14s.

STATISTICS OF COPPER FOR JANUARY AND FEBRUARY, AS PER CUSTOMS RETURNS.

		—Jan. 1 to Feb. 28.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
Imports.	Pure in Pyrites	2,057	2,567	2,158
	" Precipitate	3,302	2,869	2,645
	" Ore	1,815	2,602	2,023
	" Regulus	326	656	795
	Bars, Cakes, etc	4,848	4,906	7,782
	Total	12,348	13,600	15,403
		—February only.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
	Pure in Pyrites	1,170	1,280	1,069
	" Precipitate	1,943	1,240	1,338
	" Ore	1,094	147	972
	" Regulus	326	656	265
	Bars, Cakes, etc	3,837	3,465	6,419
	Total	8,370	6,465	2,763
		—Jan. 1 to Feb. 28.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
Exports.	Raw (English)	2,516	2,352	2,389
	Sheets	2,413	2,330	2,016
	Yellow Metal at 60 per cent.	1,517	1,525	1,160
	Brass " " 70 "	431	268	368
	Total	6,878	6,475	5,933
	Foreign	1,403	2,822	2,075
	Total	8,280	9,297	8,088
		—February only.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
	Raw (English)	1,344	1,739	1,106
	Sheets	991	1,034	1,017
	Yellow Metal at 60 per cent.	755	811	695
	Brass " " 70 "	236	96	232
	Total	3,328	3,680	3,050
	Foreign	394	1,787	1,324
	Total	3,722	5,467	4,374
		—Jan. 1 to Dec. 31.—		
		1880	1879.	1878.
		Tons.	Tons.	Tons.
Imports (all descriptions)		92,734	97,071	87,572
Exports—	English	44,587	44,575	42,282
	Foreign	14,895	17,837	12,719
	Total	59,482	62,412	55,001

Our English advices by mail include the 18th inst.:

March 14th. A small business was done in Chili Bars on Saturday. To-day, market was still quiet, in spite of charters for past fortnight being advised as only 500 tons. Cast metal £61, partly net, up to £61⅜ usual terms. Closing quotations for g. o. bs. were £61@£61⅜.

	Tons.			
	1881.	1880.	1879.	1878.
Charters, Jan. 1 to Feb. 28	5,223	10,713	7,624	8,558
" First half March	500	1,674	1,615	1,987

Opinions are still at variance whether the continued diminution of shipments from the West Coast arises from a decrease in production or from a holding back of stocks there.

March 15th. Ordinary brands sold for cash from £61@£61¼.

March 16th. Scarcely any thing doing; small sale of g. o. bs. at £61⅛ cash, £61 usual terms; sellers asking £61¼.

Telegrams give composition of the Chili charters for first half of March as 300 tons Bars for England, and 200 tons Bars for France.

SHIPMENTS.

	1881.	1880.	1879.	1878s
	Tons.	Tons.	Tons.	Ton..
January and February	4,400	8,865	7,902	7,756
February only	2,200	3,358	3,287	3,728

Thus not only do the charters, but also actual shipments, show a great diminution as compared with previous years. If it could be positively ascertained that the decrease arose from an actual falling off in the production, a favorable effect would, no doubt, be seen on values.

March 17th. No transactions in Chili Bars; £60¾ declined for g. o. bs.

March 18th. Position is unchanged and transactions limited; £61 net money, with brokerage, is asked for g. o. bs., buyers offering 5s. less money.

Australian, neglected; Wallaroo, £72; Burra Cake, £67. English quiet, but steady, at £64@£65 for Tough Cake; £66@£68 for Select Ingot; and £69@£71 for India Sheets; Y. M. Sheets, 5¾@5¾d. ℔ lb.

Tin.—Outside of a good consuming demand, which continues, there is not much business to record. The market closes firm at 20@20¼c. for all brands.

By cable to-day, London quotes £88 10s. for spot stuff, £89 10s. futures, with strong market. Singapore, $27⅝; Penang, $27¼, with exchange at 3s. 10d., equal to 20⅝c. here.

The shipments from Singapore and Penang to the United States for March aggregated 430 tons, and to Europe 450 tons. The deliveries in London were 1150 tons, in Holland 850 tons. The arrivals in London for March, from all sources were 2000 tons. Spot stock in the United States has decreased during the past month fully 500 tons, owing to the heavy consumption and light arrivals.

Our English advices by mail include the 18th inst.:

March 14th. Prices shade firmer, cash values 87¼@87¾s., usual terms.

March 15th. Good inquiry, principally for cash, 87¼s@87⅝s. being done for immediate payment, 87½s. ordinary prompt.

March 16th. Same position as yesterday, cash metal selling at 87⅝s.

March 17th. Values practically unaltered; the demand absorbs all metal offered under 87½s., even for sharp cash; transactions during the day at 87⅝s., principally prompt payment.

March 18th. Sales chiefly for cash and prompt payment, at 87⅝@87½s. A few parcels, with forward prompts, went at 87¾@87⅞s. one month, 88⅛s. three months; 88¼s. being paid for one month, with buyer's option to double the quantity. In bullion, 700 slabs at 87¼@87⅜s. cash.

STATISTICS OF TIN FOR JANUARY AND FEBRUARY AS PER CUSTOMS RETURNS.

		—Jan. 1 to Feb. 28.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
Imports, foreign		4,300	4,212	2,757
Exports.	Foreign	1,974	1,803	1,163
	English	566	762	765
Tons		2,540	2,565	1,928
		—February only.—		
		1881.	1880.	1879.
		Tons.	Tons.	Tons.
Imports, foreign		2,508	2,301	1,478
Exports.	Foreign	849	868	556
	English	334	201	469
Tons		1,183	1,159	1,025
		—Jan. 1 to Dec. 31.—		
		1880.	1879.	1878.
		Tons.	Tons.	Tons.
Exports.	English	4,395	6,218	6,210
	Foreign	8,785	8,844	6,620
Tons		13,180	15,062	12,830

Tin Plates.—The advance mentioned in our last, on the other side has been fully maintained, and prices have improved thereon 6d. per box, closing to-day at highest prices. The market here, although relatively not so high as on the other side, is fairly active and very strong. We quote per box as follows: Charcoal tins, Melyn grade, ⅜ cross, $6¼@$6⅜; Allaway grade, $5½@$6. Charcoal Roofing, Dean grade, $5½ for 14 × 20, and $11@$11¼ for 20 × 28; Allaway grade, $5⅝@$5½ for 14 × 20, and $10⅝@$10½ for 20 × 28. Coke Roofing, B. V. grade, $5 for 14 × 20, and $10 for 20 × 28. Coke tins, A. B. grade, IC, $5⅝@$5½; B. V. grade, $5@$5.05; ICW, $4½ for 14×20.

Messrs. Robert Crooks & Co., of Liverpool, under date of March 17th, say of tin and terne plates:

Large buying has cleared the neediest sellers of B. V. grade coke tins, and for these 3d advance would now have to be paid. Charcoal ternes for a similar reason are firmer. While other descriptions are procurable at the same rates as before, they are more difficult to meet with, and the tendency here too is to higher figures.

Pig-Lead.—The market has been very dull all the week, and without feature. We quote at close, 4·60@4·65c., with nothing but a retail business doing.

The shipments over the St. Louis & San Francisco RR., for week ending March 21st, were 307 tons.

The *Age of Steel*, of St. Louis, under date of March 26th, says:

The market for pig-lead continues very much depressed, our quotations of last week remaining unchanged and merely nominal. Corroders and other consumers of lead provided fair supplies some time ago, and their stocks have not become so far depleted as yet to compel them to make immediate purchases, and as between them and holders, it is narrowed down to a mere question of endurance. The business of buying and selling is at a stand-still; if holders become too uncomfortably cramped for funds, they will have to let go, and there will be a break in the market. On the other hand, if manufacturers find themselves compelled to buy, they will have to do so at a possible slight advance on quotations.

Spelter and Zinc.—We quote the former quiet and without change at 5½c., and the latter at 7c. The *Age of Steel*, under date of St. Louis, March 26th, says:

There is actually nothing doing in spelter, and any quotations that may be made can only be nominal. In consequence of the depressed condition of the market, and the great cost of reduction, it is said that at least one more of the zinc works at Carondelet will cease operating, probably the last of the current month.

Antimony.—We quote Cookson's at 14½c.; Hallett's and Johnson's at 14½c.

Quicksilver.—The San Francisco *Commercial Herald* of March 17th says:

The spot stock is light. Sales at 37c., but now held at 37½c.

The exports for the week, by sea, were as follows:

To Sydney per Australia, hence 12th inst.:

	Flasks.	Value.
Totals	500	$14,520
Previously since January 1st, 1881	7,253	208,929
Totals	7,753	$223,449
Totals same period 1880	5,359	169,476
Increase in 1881	2,394	$53,973

Receipts since January 1st, 1881, 9993 flasks.

Overland shipments from January 1st to February 1st, 1881, 1255 flasks.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, April 1.

The general report received is: Nothing doing; no change from last week. In fact, business has been quieter than for months, but still, as the deliveries on old orders continue to be very large, prices are quite firm. The consumption of iron is very large, and it can only be a matter of a few weeks until a change for the better sets in.

American Pig.—We quote a sale of 1000 tons of No. 2 Foundry Thomas iron at $22. With this exception, we learn of nothing worth recording. We quote No. 1 Foundry at $25@$26; No. 2 Foundry, $22@$23; and Forge at $20@$22.

Scotch Pig.—The business has been very small. We quote Eglinton at $21½@$22; Glengarnock, $23; Gartsherrie, $23@$23¼; Coltness, $24¼.

Messrs. John E. Swan & Brothers, of Glasgow, under date of March 18th, report 120 furnaces in blast, as against 114 at the same time last year. The quantity of iron in Connal & Co.'s stores was 532,873 tons, an increase of 2400 tons for the week. The shipments show a decrease since Christmas of 54,828 tons, as compared with the shipments to the same date in 1880. The imports of Middlesbrough pig-iron for the same period show a decrease of 1356 tons. The following were the quotations of the leading brands of No. 1 pig iron: Gartsherrie, 58s.; Coltness, 58s. 6d.; Langloan, 58s.; Summerlee, 57s.; Carnbroe, 54s.; Glengarnock, 55s.; Eglinton, 49s. Middlesbrough pig-iron was quoted as follows, f. o. b.: No. 1 Foundry, 42s. 6d.; No. 2, 40s. 6d.; No. 3, 38s. 6d.; No. 4, 38s.; No. 4 Forge, 37s. 6d.

Messrs. J. Berger Spence & Co., of Manchester, England, under date of March 19th, say:

The pig-iron trade does not seem to have developed any symptoms of improvement during the week. On the contrary, it would appear that the little progress toward recovery noticeable during last week has again collapsed.

It would seem also that confidence has been very much shaken, and, until this is effectually restored, a resumption of activity can not be hoped for. The operations in warrants at Glasgow have been unimportant, nor has a declining market tempted speculators to any noteworthy extent. Parcels have been done as low as 48s. 5d.; and as we write, the market closes at 48s. Middlesbrough Tuesday's market did not this week follow Glasgow; for although no advance was achieved, there was no necessity for selling No. 3 below 38s.—a figure current a fortnight ago—though many parcels were placed 3d. above this. Little has been done for forward delivery, as sellers have not thought it prudent to accept the offers made. Shipments are improving, but there is still far too much iron going into store. No important change has taken place in regard to hematite iron. Quotations remain about the same as during last week, and there is very little extra business doing. Makers of Derbyshire and Lincolnshire iron steadily maintain their quotations, but they restrict business.

Rails.—Sales of about 8000 tons of Foreign at $62 @$65, according to section, are reported. There is still a fair inquiry for iron rails; we learn of no business. Foreign are worth $47@$49 here, and Domestic $48@ $50 at mills.

Old Rails are without business. We quote Ts. at $27½, and D. Hs. at $29.

Wrought Scrap is quiet. We quote nominally at $30@$31.

We publish the following letters from our regular correspondents:

Baltimore. March 27.

[Specially reported by R. C. HOFFMAN & Co.]

The iron market continues dull and quiet, with no change in prices.

Balt. Char.	$38.00@$40.00	Mot. and Wh.	$18.00@$20.00
Va. "	38.00@ 40.00	Cl. C. B. Bl'om	60.00@ 62.50
Anth. No. 1	25.00@ 26.00	" " Billets	.....@ .....
" " 2	23.00@ 24.00	Refined Bl'm.	.....@ .....
" " 3	20.00@ 22.00		

Buffalo. March 29.

[Specially reported by PALEN & BURNS.]

Iron here seems to be under a considerable depression and few transactions are reported. Sellers are not willing to force the market and concede to the buyers' ideas of price. No. 1 Foundry is quoted at $24@$27 here, according to quality, with the other grades in proportion, per gross ton cash. Old rails, $31@$32 asked, with only $29 @$30 offered, cash. Old car-wheels, $32@$33 asked, $31 offered, cash. Several small lots have been sold lately at about $32 here, gross ton.

Cincinnati. March 30.

[Specially reported by JACOB TRABER & Co.]

Our pig-iron market continues quiet. The molders' strike being laid by, and operations in the shops gradually renewed, will no doubt affect the market favorably. Stocks of all kinds of pig-iron are ample, except the better grades of CC and coke irons, and we quote:

	Four mos.
No. 1 Hanging Rock Charcoal Pig-Iron	$26.50@$27.50
No. 2 " " " "	26.00@ 26.50
No. 1 Tennessee " "	25.00@ 26.50
No. 1 Hanging Rock Coke "	24.50@ 25.00
No. 2 " " "	22.50@ 23.50
No. 1 Jackson Co. Stone Coal "	20.50@ 23.00
H. R. C. B. Car-Wheels, all Nos	40.00@ 42.00
Southern C. B. Car-Wheels, all Nos	37.00@ 38.00
Virginia " " "	39.00@ 40.00

Columbus, O. March 29.

[Specially reported by KING, GILBERT & WARNER.]

There has been a very fair inquiry for pig-iron during the past week. Prices, however, are scarcely as firm as they were two or three weeks ago. The stocks of iron in consumers' hands are light, and we therefore look for a more active business during April and May. We quote same as last week.

FOUNDRY IRONS.

No. 1 Hanging Rock charcoals	$27.00@$27.50
" 2 " "	26.00@ 26.50
" 1 Hocking Valley	23.50@ 24.00
" 2 " "	22.50@ 23.00
" 1 American Scotch	23.50@ 24.00
" 1 Glasgow	23.50@ 24.00
" 1 Jackson County	22.50@ 23.00
" 2 " "	21.50@ 22.00
" 1 Silver Gray	21.50@ 22.00
" 2 "	20.00@ 21.00

MILL IRONS.

Gray neutral	21.00@ 22.00
Mottled and white neutral	19.00@ 20.00
Gray cold short	20.00@ 21.00
Mottled and white cold short	18.00@ 19.00

Louisville. March 29.

[Specially reported by GEORGE H. HULL & Co.]

The market is very quiet in tone, and, but for the large aggregate of sales, we should expect it to be a little lower in price. Some of the largest concerns, however, are sold so far ahead that they decline to book further orders at present, and there is nothing pressing on the market, except some odd lots of inferior grade. As nearly all sales made in this market are for cash, we continue to quote on this basis as below:

FOUNDRY IRONS.

	No. 1.	No. 2.
Hanging Rock Charcoal	$27.00@$28.00	$26.00@$30.00
Southern Charcoal	24.00@ 25.00	22.00@ 23.00
H'n'g Rock, Stc'l & Coke	23.50@ 24.00	22.50@ 23.00
Southern Stonecoal & Coke	23.50@ 24.00	22 50@ 23.50

"Amer. Scotch"	$23.00@$24	Silver Gray	$19.00@$22.00
Scotch Iron	25.00@ 26		

MILL IRONS.

No. 1 Charcoal, Cold-short & Neutral	$22.00@$24.00
No. 1 Stc'l & Coke, Cold-short & Neutral	22.00@ .....
No. 2 Stc'l & Coke, Cold-short & Neutral	21.00@ 21.50
No. 1 Missouri and Indiana, Red-short	26.00@ 27.00
White & Mottled, Cold-short & Neutral	19.00@ 20.00

CAR-WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold Blast	$35.00@$42.00
Alabama and Georgia, Cold Blast	35.00@ 40.00
Kentucky, Cold Blast	35.00@ 40.00

Richmond. March 28.

[Specially reported by ASA SNYDER.]

The volume of iron entering directly into consumption is large. This market is steady and quotations unchanged.

Scotch Pig-Iron	$24.00@$26.00
Amer. Scotch Pig-Iron	27.00@ 29.00
American " " No. 1	25.00@ 28.00
" " " No. 2	22.00@ 25.00
" " " No. 3	21.00@ 23.00
" " Mottled and W	19.00@ 21.00
Best Charcoal Wheel Iron	38.00@ 41.00
Va. Cold Blast Charcoal Pig-Iron, neutral	....
" Warm "	....
Old Rails	26.00@ 28.00
Old Wheels	28.00@ 29.00
Wrought Scrap No. 1	22.00@ 23.00
Cast Machinery Scrap	21.00@ 22.00
Richmond Refined Bar Iron	2 6-10@ .....
Horseshoes (Tredegar)	4.00@ .....
Mule-shoes "	5.00@ .....
Virginia Coke Pig-Iron, No. 1	23.50@ .....

St. Louis. March 26.

[Specially reported by HOFFER, PLUMB & Co.]

The market is still dull, and concessions are making on low-class irons. High grades and charcoal irons, however, maintain their positions. We quote for cash:

HOT BLAST CHARCOAL.

Missouri	$28.00@29.00
Southern	25.00@26.00
Hanging Rock	29.00@.....

COKE AND COAL.

Missouri	None offering
Southern	$24.00@25.00
Ohio	23.00@25.00

MILL IRONS.

Cold short	$22.50@23.00
Red short	26.00@. ....

CAR-WHEEL AND MALLEABLE IRONS.

Missouri	$32.00@35.00
Southern	35.00@38.00
Ohio	35.00@42 00

John H. Austin & Co.'s Special Market Report.

LONDON, E. C., March 17.

STEEL RAILS.—£6 5s.@£6 15s. per ton; market steady. During the past week, a fair business has been doing up to £6 5s. per ton net cash for American account. Mexican orders have also been placed for 55,000 tons 30 and 40-pound sections for extended delivery. There are other large transactions pending.

IRON RAILS.—£5 5s.; East Coast, £5 7s. 6d.@£5 10s.; Welsh ports about 5000 tons 56-pounds done at £5 7s. 6d. per ton net cash, f. o. b.; buyers now offering rather less, but sellers firm at the quotations given.

BAR IRON.—£5 2s. 6d.@£5 5s. per ton, with steady market.

OLD RAILS.—Dull, but very few offering; quotations unchanged.

HEAVY WROUGHT SCRAP-IRON.—70.@72s. 6d. per ton, f. o. b.; weight and quality inspected before shipment.

OLD RAILWAY LEAF SPRING STEEL.—In good request, £6 per ton, c. i. f., offered for May and June shipments.

OLD CAST-IRON RAILWAY CHAIRS.—42@44s. per ton.

STEEL BLOOMS, 7" × 7" AND UPWARD.—£5 15s. paid, f. o. b. Newport, for 1000 tons.

BESSEMER PIG-IRON, Nos. 1, 2, AND 3.—Flat, 60@65s. per ton.

SCOTCH PIG-IRON.—Flat market, at 48s. 3d. cash.

MIDDLESBROUGH PIG-IRON, No. 3.—Quiet, at 37s. 9d. cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, April 1.

Anthracite.

The demoralization which had previously set in in the coal trade has not yet been removed, although there are indications of an improvement, both in demand and prices. The companies have agreed to a further curtailment of production, and it is understood that full-time work will not be resumed at the mines until the demand for coal warrants it, and that if even a greater curtailment is necessary it will be made. It is intimated that an advance in prices is likely to take place at a much earlier date than many buyers anticipate.

The production of anthracite coal last week was 365,616 tons, as compared with 511,850 tons the previous week, and 360,419 tons the corresponding week of 1879. The total production from January 1st to March 26th was 5,565,210 tons, as against 4,322,961 tons for the like period of last year, showing an increase this year of 1,242,249 tons.

Bituminous.

There has been a fair amount of business done in this class of coal. The Clearfield operators are quite cheerful, and appear fairly well satisfied with their position in the market. Such is not entirely the case, however, with the Cumberland shippers. The failure of the Chesapeake & Ohio Canal to reduce tolls gives great dissatisfaction, and the indications point to an absorption of most of the business of this year by the railroads. There is some business done at Baltimore at $3.60@$3.65, f. o. b., and there is an indisposition to do canal business. There is but one company shipping by canal, and that company to a very small extent.

A matter of considerable interest to the bituminous trade, and particularly the Cumberland shippers, is the movement to revive the Snow-Shoe District, in Pennsylvania. A company with the corporate title of the Show-Shoe Coal Co. has been formed, and has purchased a tract of land containing 51,000 acres, of which 21,000 acres are said to be underlain by three veins of coal, similar to the Clearfield coal. This property is located on the Bald Eagle Valley RR., and is 29 miles nearer the Northern market and the Lehigh Valley RR. than the Clearfield region. The property is opened, and collieries are producing from 600 to 800 tons per day, and by the end of the year they will probably have a capacity of 1200 to 1500 tons per day. As an evidence that this district has a future, it may be stated that the well-known firm of Berwind, White & Co. has leased 5000 acres of this land, and is now operating the property. The Cumberland companies have already suffered so much from the business taken away from them by this firm that they will not look pleasantly upon their having a larger supply of coal to dispose of.

We publish the following letters from our regular correspondents:

Baltimore. March 31.

[Specially reported.]

Trade since last report has been moderately active. The weather has been for the most part mild, and consequently sales have not attained the volume we had hoped for. During the latter half of the month, cars have been plenty and shipments quite free. There is no stock here, dealers having stopped their orders, discounting the sharp decline to be announced for April. The companies controlling this market will meet in Philadelphia to-morrow—by their representatives—and will arrange a schedule of prices by rail and water for Maryland and Virginia. Prices, it is expected, will *touch bottom* for the season, and will, it is conjectured, be about the opening figure of last year. If this be the case, we will expect to do a good trade for the year 1881-82, and consumers will not hold off in buying as late as they did last year. With prices as low as they can be placed to be remunerative to the producer and transporter, and a gradual stiffening in rates as the season advances, and no over-production or breaking faith after prices are announced, will make this the most satisfactory year in the history of the trade, wholesale and retail.

Wholesale prices per 2240 lbs.

ANTHRACITE COAL.

Hard White Ash, Free Burning, and Shamokin.

	In cars at N. C. RR. depot.
Lump and Steamboat	$5.60
Broken	4.80
Egg	5.00
Stove	5.15
Chestnut	5.00

Lykens Valley Red Ash.

Broken	$5.30
Egg	5.50
Stove	5.65
Chestnut	5.50

Afloat, per cargo, 15c. less than car rates; to trade in yard or wharf, 75c. additional.

Buffalo. March 29.

[Specially reported by LEE & LOOMIS.]

No change in prices of either anthracite or bituminous coal or coke. Trade quiet and demand moderate.

Size.	Lackawanna and Shamokin. Cars and afloat.	Lehigh. Cars and afloat.
Lump		$6.50
Grate (or broken)	$4.68	....
Egg	4.68	....
Stove	4.95	....
Chestnut	5.17	....

Per ton of 2000 lbs., delivered at Buffalo:

	Lump.	Run of mine.	Nut.	Slack.
Connellsville coke	$5.50	....	....	.....
Brookfield Coal	....	.....	.....	.....
Brier Hill	4.00	.....	.....	.....
Youghiogheny	3.85	.....	.....	.....
Monterey	3.25	$3.00	$2.75	$2.25
Catfish	3.25	3.00	2.75	2.25
Stoneboro'	3.25	3.00	2.75	2.25
Sterling Cannel	5.25	.....	.....	.....

Chicago. March 29.

[Specially reported by RENO & LITTLE.]

March has been a cold month—several heavy falls of snow—railroads blocked by deep snow in this region and northwest of us.

The coal docks in this city were never before so bare of anthracite coal as now.

The receipts of anthracite coal by rail are becoming a little larger, but there is as yet no glut; all that comes finds ready sale at current prices.

The receipts of bituminous coal are large, but the demand is large also, consequently there is no accumulation. The coal trade has been in a healthy condition all winter, supply and demand about equal. No change in prices except as noted

At retail to consumers.

Grate	$8.50	Stove	$8.00
Egg	8.50	Nut	8.50

Bituminous coal, per ton.

Brier Hill, bogus	$7 00@7.50	Wilmington	$4.50
Brier " genuine	8.50@9.00	Piedmont, per ton	6.50
Erie, "	8.50@9.00	Indiana	4.50
Erie, bogus	7.00@7.50	Illinois	4.50

Cleveland. March 28.

[Specially reported by F. A. BATES.]

All indications point to a large business in soft coal upon the opening of navigation; and from sales already made, we judge that good prices will prevail. The unusually long and cold winter has exhausted stocks, especially in places too remote from the mines to be reached by rail, so that the demand for coal will be unprecedently large for prompt shipment as soon as the lakes are open. Already a good many charters have been made for Chicago and Milwaukee at $1 per ton, and several vessels loaded and ready. Charters to Marquette have been made at 75 cents, and the early demand from the iron and copper regions of Lake Superior bids fair to be far in excess of any previous year. We quote prices of actual sales f. o. b. vessel here:

Church Hill	$4.00	Brier Hill	$3.50
Massillon	3.00	Straitsville	2.90
Hocking Valley	2.90	Shawnee	2.90
Columbiana	2.50	Salineville	2.50

Louisville. March 28.

[Specially reported by BYRNE & SPEED.]

The demand for coal continues fair. The supply at this point is small, but sufficient for present wants. Prices are as follows:

WHOLESALE.

Pittsburg, per bush....10c. | Kentucky, per bush..... 8c.

RETAIL.

Pittsburg, per bush	16c.	Kentucky, per bush	12c.
Cannel, " "	18c.	Coke, " "	12c.

Anthracite, per ton, $9.

Montreal. March 28.

[Specially reported by ROBERT C. ADAMS & CO.]

Owing to the extreme cold experienced in Montreal, the stocks of all kinds of anthracite coal are small, and being economized to last until the arrivals upon the opening of navigation. Some parties are importing coal by rail, but the demand does not warrant any large consignments.

Prices at retail, per 2000 lbs., delivered, are:

Stove....$8.50 | Egg and Chestnut.....$8.00

We shall be without wholesale prices until the canals are again opened.

Bituminous: From Nova Scotia mines, ex cars, at Montreal, $4.60@$4.75.

Richmond. March 28.

[Specially reported by S. H. HAWES.]

The hard winter just past has exhausted all anthracite stock in this market, so there will be a good demand for that coal when spring prices are settled at shipping points. The steam coals from West Virginia are being largely used here in place of Cumberland, and give entire satisfaction. Unless Cumberland and Clearfield coals drop from their high figures, these West Virginia coals will soon come into competition with them in other ports. There is nothing of special interest to report at present. No change in quotations.

Kanawha Cannel	$9.00	New River Bituminous	$3.30
Coalburg Splint	4.50	Clover Hill Coal	2.50
Lewiston "	4.50	Norwood Gas and	
Kanawha Gas Coal	4.10	Steam Coal	2.70

Toledo. March 28.

[Specially reported by GOSLINE & BARBOUR.]

There is no change in prices from our last quotations, which we inclose. There will not be much doing in soft coal until navigation opens on the lakes, which is not likely to occur before the 1st of May, which would be a month later than the opening last year. Shippers are expecting a brisk demand for coal for early shipments, on account of the short supply throughout the West. Vessels are now chartering for Chicago and Milwaukee, to load from Toledo, Sandusky, or Cleveland, at $1 net, free in and out, and to Detroit at 40@50c. per ton. The opening prices for Ohio coal, f. o. b. vessel at the different points, will be about the same as last year's prices. The stocks of hard coal to be carried over will not amount to any thing. Even the consumers will not have any thing left in their cellars this spring.

Hard Coal on Cars.	Per ton of 2000 lbs.
Grate and Egg	$5.57
Stove	5.85
Chestnut	6.07
Retail delivery, per ton of 2000 lbs., all sizes	7.50
Soft Coal on Cars.	
Straitsville and Hocking Valley, lump	$2 90
Straitsville and Hocking Valley, nut	2.30
Retail delivery, lump	4.50
" " nut	4.00
Massillon, lump	3.25
Massillon, nut	2.50
Retail delivery, lump	4.75
" " nut	4.00
Blossburg Smithing, lump	4.15
Cumberland, lump	4.50

San Francisco. March 24.

Imports during the week include the Empire's cargo of 736 tons Carbondale; 2100 tons of Seattle, per Two Brothers; 2000 tons Liverpool, per Parisian. This was landed at Wilmington, and we are informed that the ship Three Brothers from same is under contract to discharge her cargo of 3500 tons at same port. The Cassandra Adams brings 1925 tons Wellington, and the Lizzie Williams from same 1216 tons; the ship Rokeby Hall, from Liverpool, brought both coal and coke. The Seattle *Intelligencer* says during January eleven vessels took coal from this port, aggregating in quantity 15,467 tons. Of this 3000 tons were taken from the Renton mines, and taken by the barks Antioch and Montana, the remainder being from the Seattle mine, and taken by vessels as follows:

	Tons.
Alaska	2,029
Two Brothers	2,105
Great Western	2,044
Fresno	2,014
Enoch Talbot	1,865
Aureola	1,300
Lizzie Williams	1,216
Whistler	697
Idaho	197
Total	12,467

The shipments of February, 1880, amounted to 15,387 tons, or only 80 tons less than the shipments of February, 1881. The shipments of January and February, 1881, were 25,884 tons, against 16,752 tons during the same months last year. Of the coal shipped so far this year 2349 tons were from the Renton mine, and the remainder from the Seattle. The spot market has undergone no special change during the week, but at best the tendency is downward. For cargoes to arrive and for shipment we quote English and Scotch at $6.50@$7; Australian, $6.75 @$7.25 for shipment. Cargoes near at hand can be placed at an advance upon these figures. The Aureola brings 1320 tons Seattle.—*Commercial Herald.*

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ending March 26th, and years from January 1st:

TONS OF 2240 LBS.	1881. Week.	1881. Year.	1880. Week.	1880. Year.
Wyoming Region.				
D. & H. Canal Co.	57,786	821,061	47,978	703,838
D. L. & W. RR. Co.	60,035	925,018	59,113	742,229
Penn. Coal Co.	16,951	235,098	15,086	162,199
L. V. RR. Co.	3,775	240,323	14,380	215,383
P. & N. Y. RR. Co.	1,141	11,394	439	3,157
C. RR. of N. J.	48,802	526,271	26,229	311,772
	188,490	2,759,165	163,225	2,138,578
Lehigh Region.				
L. V. RR. Co.	52,167	914,329	48,130	563,469
C. RR. of N. J.	30,376	410,219	32,477	392,022
S. H. & W. B. RR.		1,176		8,841
	82,543	1,325,724	80,607	964,332
Schuylkill Region.				
P. & R. RR. Co.	77,043	1,243,607	93,716	1,072,010
Shamokin & Lykens Val.	16,500	222,300	22,003	138,027
	93,543	1,465,907	115,719	1,210,037
Sullivan Region.				
St Line&Sul.RR.Co.	1,043	14,414	868	10,014
Total	365,616	5,565,210	360,419	4,322,961
Increase	5,197	1,242,249		
Decrease				

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Total same time in 1876	2,163,127 tons.
" " " " 1877	3,509,001 "
" " " " 1878	2,742,731 "
" " " " 1879	4,727,100 "
" " " " 1880	4,322,961 "

Belvidere-Delaware Railroad Report for the week ending March 26th:

	Week.	Year. 1881.	Year. 1880.
Coal for shipment at Coal Port (Trenton)	391	494	862
Coal for shipment at South Amboy	11,069	139,312	90,367
Coal for distribution	8,669	189,772	109,683
Coal for company's use	1,346	25,873	24,259

The decrease in shipments of Cumberland Coal over the Cumberland Branch and Cumberland & Pennsylvania Railroad amounts to 16,895 tons, as compared with the corresponding period in 1880.

The Production of Bituminous Coal for the week ending March 26th was as follows:

Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
*Tons of 2240 lbs.	39,805	354,392
Barclay Region, Pa.		
*Barclay RR., tons of 2240 lbs	9,530	110,666
Broad Top Region, Pa.		
*Huntingdon & Broad Top RR.	5,656	58,706

The Production of Coke for the week ending March 12th, and year from Jan. 1st:

Tons of 2000 lbs.	Week.	Year.
Penn. RR. (Alleghany Region)	2,382	19,988
West Penn. RR.	2,148	18,444
Southwest Penn. RR.	30,902	301,709
Penn. & Westmoreland Region, Pa. RR.	3,530	34,802
Pittsburg, Penn. RR	10,571	83,828
Snow Shoe (Clearfield Region)	131	1,687
Total	49,664	460,458

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to April 1st, 1881.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnston, South Amboy, Hoboken, and Weehawken.
Alexandria		.85	
Annapolis	.75		
Augusta		2.25	
Baltimore	.60		
Bangor		2.50	
Bath, Me		1.50	
Beverly			
Boston, Mass.	1.40@1.55	1.50	
Bristol			
Bridgeport, Conn.		1.40	
Brooklyn			
Cambridge, Mass.			
Cambridgeport			
Charleston			
Charlestown			
Chelsea			
City Point			
Com. Pt., Mass.			
E. Boston			
East Cambridge			
E.Gr'nwich,R. I.			
Fall River		1 40	
Fredericksb'g,Va			
Galveston			
Georgetown, D.C.			
Gloucester			
Hartford			
Hackensack			
Hudson		1.50	
Lynn			
Marblehead			
Medford			
Millville			
Milton			
Newark, N. J.		1.40	
New Bedford	1.25	1.45	
Newburyport		1.70	
New Haven		1.35	
New London		1.35	
Newbern			
Newport			
New York	.90	1.25	
Norfolk, Va	.85	.90	
Norwich		1.40	
Norwalk, Conn		1.40	
Pawtucket		1.50	
Philadelphia		.60	
Portland		1.50	
Portsmouth, Va.			
Portsmouth, N.H.		1.65	
Providence	1.25	1.40	
Quincy Point			
Richmond, Va.			
Rockland			
Rockport			
Roxbury			
Saco			
Sag Harbor			
Salem, Mass.		1.60	
Saugus			
Savannah	1.30		
Somerset	1.25		
Staten Island			
Trenton		1.00	
Troy		1.75	
Wareham		1.80	
Washington	***	.90	
Weymouth			
Williamsbg, N.Y.			
Wilmington, Del.		.60	
Wilmington, N.C.			
	***1.00@.95@.85		

*And discharging. † And discharging and towing. ‡ 3c. per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. ** Below bridge.

THE NEW PULSOMETER,

CHEAP, ECONOMICAL, EFFICIENT.

BRATTLEBORO', VERMONT, Jan. 25, 1881.

PULSOMETER STEAM PUMP CO.:

GENTLEMEN: After thirty days' trial, I am very much pleased with the No. 3 composition New Pulsometer, and am ready to pay for the same. I have pumped liquor at 180 degrees a number of times, and it worked well. This is from 30 to 40 degrees hotter than I have occasion to pump, as a rule. I find that its capacity is more than is claimed for it in your book. On the whole, I believe it to be the *best pump* for a TANNERY run by steam that I ever saw. Yours truly, S. H. WARREN.

For book giving many letters like the above, full description, and prices of the New Pulsometer, address

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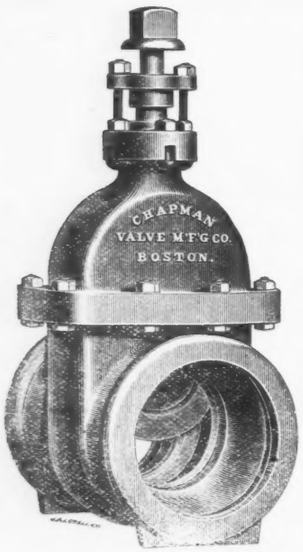

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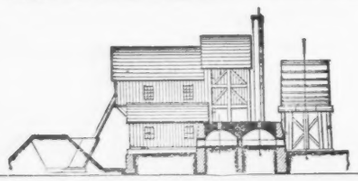

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Coal and Ore Crushing and Washing Machinery for separating Anthracite and Bituminous Coal from Slate, Sulphur, etc.; also, all kinds of ores from their impurities and separately, when combined together.

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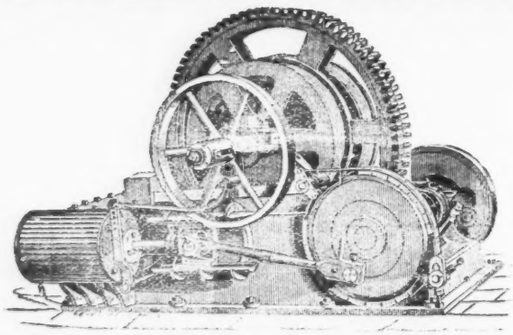

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DIVIDENDS.

OFFICE OF THE STARR-GROVE MINING COMPANY, No. 2 Nassau street, corner Wall street New York, March 16th, 1881.

DIVIDEND No. 5.

The Board of Trustees have this day declared the regular monthly dividend of $20,000, being ONE PER CENT ON THE CAPITAL STOCK of the Company, or TEN CENTS PER SHARE, payable on the 31st inst., at this office.
The transfer-books will be closed from the 25th to the 31st inclusive. JOHN R. BOTHWELL, Secretary.
WM. S. CLARKE, President.

OFFICE OF THE TOMBSTONE MILL AND MINING COMPANY, 432 Walnut Street.

13TH DIVIDEND.

PHILADELPHIA, March 30, 1881.

The Executive Committee of the Board of Directors of this company have this day declared the regular

MONTHLY DIVIDEND OF $50,000;

being ten cents on each share of the capital stock of the company; payable on and after April 15th, at this office.
Transfer-books closed from 10th to 15th *inclusive*.

GEORGE BURNHAM, President.
W. J. CHEYNEY, Secretary.

GLASS-PENDERY CONSOLIDATED MINING COMPANY, New York, March 26th, 1881.

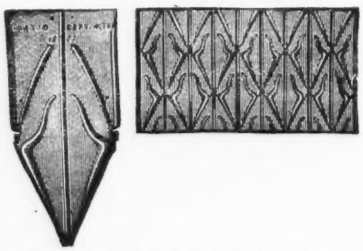
The Trustees of this company have declared a

DIVIDEND OF TEN CENTS

per share, upon the capital stock, amounting to $25,000, payable at the office of the company, Rooms 55, 57, Boreel Building, No. 115 Broadway, on the 8th of April.
Books close April 4th, and reopen April 11th.

C A. MANNERS, Secretary.

METALLIC SHINGLES.



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